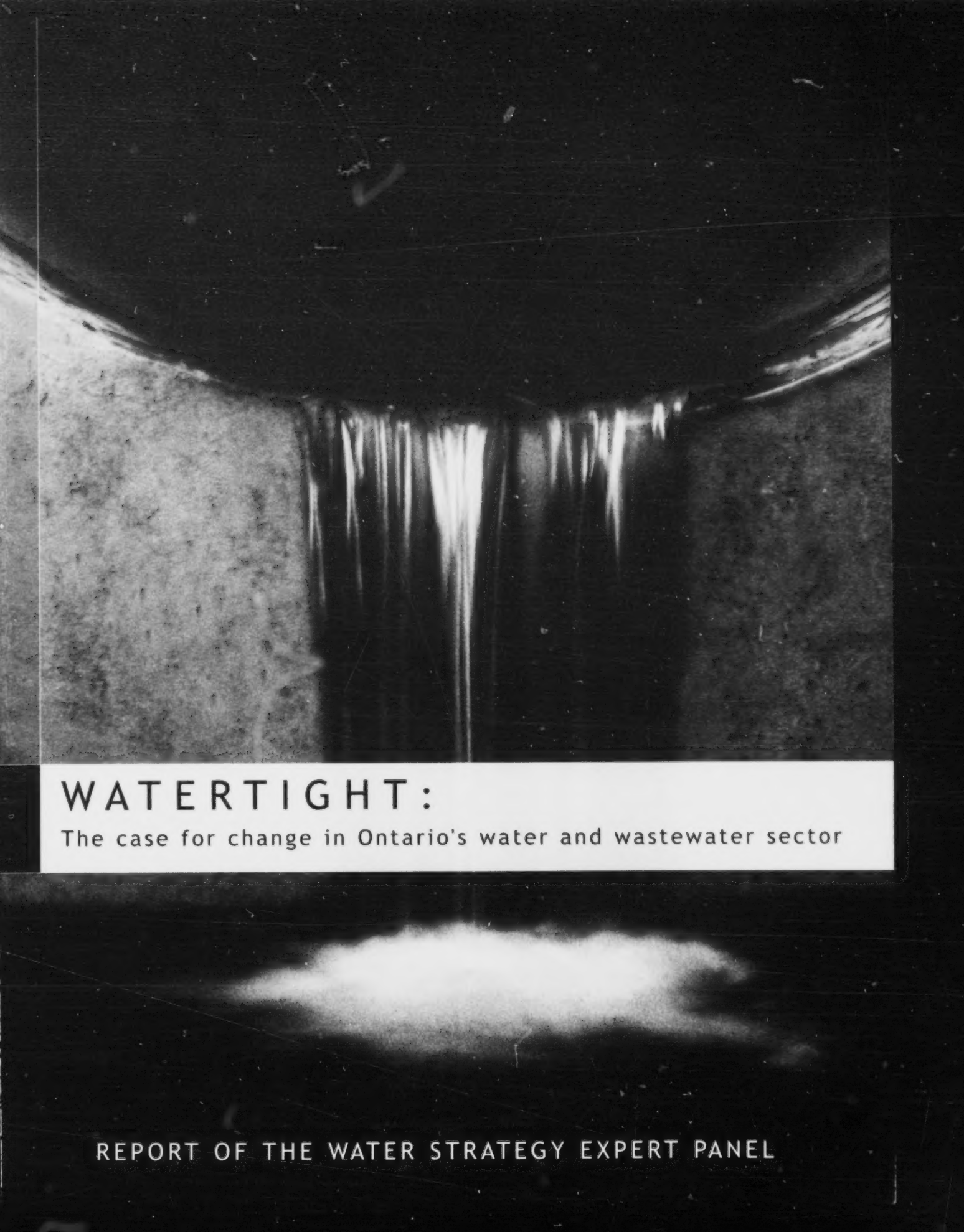

WATERTIGHT:

The case for change in Ontario's water and wastewater sector

REPORT OF THE WATER STRATEGY EXPERT PANEL

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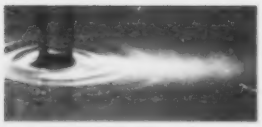

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May 2005

Hon. David Caplan
Minister of Public Infrastructure Renewal
Queen's Park
Toronto

Dear Mr. Caplan,

Further to Order-in-Council 1494-2004, we have the honour of presenting to you our report and recommendations on the long-term organization and financing of Ontario's water and wastewater sector.

We would like to acknowledge the many individuals, municipalities and professional organizations that provided the Panel with their insights and suggestions. Their input was thoughtful and helpful in guiding our recommendations contained in the report. The Panel would also like to express our sincere gratitude to the members of your staff who greatly assisted us throughout the course of our work.

Minister, we are confident that the course of action contained in this report will put the stewardship of this vital resource on a sustainable, affordable track for years to come.

Respectfully,
The Expert Panel on Water and Wastewater Strategy

Harry Swain (Chair) Fred Lazar Jim Pine

Ontario

TABLE OF CONTENTS

1. INTRODUCTION 3

Mandate 3
How the Panel carried out its work 4
Terminology and abbreviations 4
A note on the quotations 5

2. SUMMARY: PROBLEMS AND SOLUTIONS 7

The nature of the problem 7
Most users can pay—and should 9
The needed reforms 11

3. CONTEXT 13

How the Ontario system evolved 13
The legislative context 14
Governance and organization 14
Since Walkerton 15

4. STRUCTURE, CAPACITY AND SCALE 17

The benefits 18
Achieving consolidation 21
Planning across boundaries 24
Joint pipelines 24
The North 25
Regional municipalities 26
Financial help 26
Larger systems: tentative progress 27

5. GOVERNANCE 31

The municipal governance model 31
The utility model 32
Municipal service boards 32
Corporatization: the best choice 33
Outside directors 34
Shareholder's declaration 34
Financial flexibility 34
Ownership and operation 35

6. REGULATION 37

Economic regulation 37
A different regulatory model 38
An Ontario Water Board 38
Composition of the Water Board 40
Water-quality regulations 40
Regulation and affordability 40
Changing approaches 41
Certificate of Compliance 42
Inspection and enforcement 42
Strengthening the role of MOE 43

TABLE OF CONTENTS (CONTINUED)

Projecting costs	45
The role of borrowing	47
Borrowing flexibility for water services	48
Timing	49
Accounting practices	49
Grants and subsidies	50
High-cost systems	51
Managing the demand for water	54
Metering	55
Elements of full cost	57
Determining costs	58
Affordability and sustainability	60
Rate structures	61
Seasonal pricing	62
Local cross-subsidization	62
Wastewater services	63
Towards more timely adoption	65
Training	66
Current situation	69
Available options	70
The Collingwood to Alliston pipeline	73
Emergency services	74
Benefits of recommendations	75
A strong and sustainable sector	76

INTRODUCTION

The Expert Panel on Water and Wastewater Strategy was convened by the provincial government in August 2004 to provide advice on the organization and long-term financing of Ontario's water and wastewater systems.

In some respects, the work of the Panel may be seen as part of the province's long-term response to the tragedy at Walkerton. In May 2000, the drinking water system of this town of 4,800 people in the rolling farmland of Bruce County became contaminated with a virulent strain of *E. coli*. In the ensuing outbreak, 2,300 people became ill and seven died. Many of those who survived suffered permanent damage to their health.

In the aftermath, the provincial government appointed Mr. Justice Dennis O'Connor of the Ontario Court of Appeal to head an inquiry into what happened and how to ensure it never happened again. Part 2 of the Report made 93 recommendations, all related to the public health mandate of the inquiry.[1] These recommendations were respectful of the goals of conservation, environmental protection, equity and economic efficiency, but properly focused on the urgent question of assuring the quality of Ontario's drinking water.

This Panel picks up where the O'Connor report ended. The prime focus is on how best and most economically to deliver the high quality standards recommended by Justice O'Connor and endorsed by successive provincial governments.[2] The Panel was asked to include wastewater collection and treatment, which the Walkerton Inquiry had not considered.

While Walkerton was the catalyst for many recent changes in the water and wastewater sector in Ontario and indeed across Canada, there is strong evidence that the status quo is becoming untenable. The province's water and wastewater assets are the legacy of investments made over more than a century, and many of the materials used are reaching the end of their productive lives. Ontario's water prices, always low by world standards, do not approach the true cost of service in most communities. Many municipalities will be hard-pressed to invest enough to bring their systems into good repair and meet increasingly high standards while keeping their rates affordable. The need to address this issue was the Panel's starting point.

TABLE 1: SUMMARY OF POST-WALKERTON ACTIONS ON WATER

Early Response	Long-term Reform
► Ontario Regulation 459 (now 170)	► Quality management systems
► *Safe Drinking Water Act*	► Full-cost recovery regulations
► *Sustainable Water and Sewage Systems Act*	► Source protection
► *Nutrient Management Act*	► Expert water panel advice on organization and financing
► Financing programs	

[1] Ontario, Ministry of the Attorney General, *Report of the Walkerton Inquiry*, Parts 1 and 2, Hon. D. R. O'Connor (Toronto: Queen's Printer for Ontario, 2002).

[2] Progress on the O'Connor recommendations can be tracked on the website of the Ministry of the Environment, www.ene.gov.on.ca/water.htm

The Panel's mandate may be summarized as advising on:

- The organization, structure and governance of Ontario water and wastewater systems;
- How water rates should be set, regulated, and kept affordable;
- How much investment is needed in the sector, and how this might be financed;
- The future of the Ontario Clean Water Agency, a provincially-owned body that provides operating and other services to the sector; and
- Several related issues, including conservation and innovative approaches to service delivery.

The detailed mandate of the Panel and brief biographies of its members appear as Annexes A and B.

HOW THE PANEL CARRIED OUT ITS WORK

From the beginning of this review, in the late summer of 2004, the Panel travelled to communities all over Ontario and solicited the views of municipalities and a wide range of other organizations and individuals with an interest in the water sector.

Over the course of five months, the Panel met with staff, elected officials and other interested parties from 116 municipalities in Ontario, either individually in communities or at larger gatherings. Many other interested parties and individuals participated in Panel meetings. A complete list of municipalities and other entities that met with the Panel appears as Annex C. Many of these entities also posted submissions to the Panel's website at www.waterpanel.ontario.ca. The Panel thanks all those who took the time to set out their informed and often thought-provoking views.

Several ministries and Ontario government agencies provided the Panel with helpful briefings and follow-up information. The Panel thanks the staff of those organizations, which are detailed in Annex C, for their help.

The Ministry of Public Infrastructure Renewal (PIR), to whose Minister the Panel presented this report, supported the Panel with research, advice and logistical help throughout its tenure. Ministry staff prepared technical background papers, as well as being responsible for the financial modeling and mapping work that is referred to in this report. They also accommodated the shifting schedules of Panel members in organizing meetings and travel itineraries. In Annex C, the Panel thanks the staff of the Ministry and a number of other individuals who made this report possible. The dedication, hard work, professionalism, and patience of this group were critical from conception to its completion.

TERMINOLOGY AND ABBREVIATIONS

In this report, the following terminology has been adopted:

A "water service" means a municipality or municipally owned corporation that owns water or wastewater assets, or both, and delivers the related services directly or through a contract operator.

A "water system" means a physically connected system of water treatment plant(s) and a distribution system, or a physically connected system of wastewater treatment plant(s) and a collection system, or both, serving a specific group of customers.

A "water service area" refers to a geographical area consisting of one or more water systems that are served directly by a water service or under a single contract with a contract operator.

The "water sector" refers broadly to all activities and entities involved in building, owning, financing, regulating, governing and maintaining water systems.

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The following abbreviations are also used in the text:

COMRIF	Canada-Ontario Municipal Rural Infrastructure Fund
DWQMS	Drinking Water Quality Management Standard
MOE	Ministry of the Environment
OCWA	Ontario Clean Water Agency
OEB	Ontario Energy Board
OMWA	Ontario Municipal Water Association
O. Reg.	Ontario Regulation
OSIFA	Ontario Strategic Infrastructure Financing Authority
OWRA	Ontario Water Resources Act
OWRC	Ontario Water Resources Commission
OWWA	Ontario Water Works Association
PIR	Ministry of Public Infrastructure Renewal
PUC	Public Utilities Commission
SDWA	Safe Drinking Water Act
SWSSA	Sustainable Water and Sewage Systems Act

Most of the quotations highlighted throughout the report come from written submissions to the Water Panel. The exceptions are:

- on page 7, William Henry's comment appeared on the Environment News Service under the title "Crumbling infrastructure erodes American quality of life," www.ens-newswire.com/ens/mar2005/2005-03-10-02.asp, accessed 11 March 2005; and
- on page 50, the comment from the Ontario Water Works Association and Ontario Municipal Water Association appeared in its 2004 response to a provincial discussion paper on infrastructure funding.

SUMMARY: PROBLEMS AND SOLUTIONS

People in Ontario have every right to expect a future in which their drinking water is safe, clean and pure, its delivery is reliable, and water services do not degrade the province's natural beauty, but instead respond to the need to nurture every living thing.

> "Every day [in the United States], six billion gallons of clean, treated drinking water disappears, mostly due to old, leaky pipes and water mains. That's enough water to serve the population of a state the size of California."
>
> William Henry, president of the American Society of Civil Engineers

Few people see roadblocks to this future. After all, the quality of Ontario's water is among the highest in the world, and the price of its water and wastewater services among the lowest. Yet there is a serious and growing problem: an unpaid bill of $11 billion for upkeep and repairs. Today its impact is felt through water main breaks, unreliable service, power failures, shattered road surfaces and backed-up sewers – annoyances that often bring with them further costs. Far more worrisome, however, is that tomorrow it may create a threat to public health and safety, if needs continue to go unmet.

How is it possible that a province bordered by the world's largest reservoir of fresh water is facing such serious concerns? The answer may lie in the very abundance of this natural resource: for too long, we have failed to give water its full value.

Fortunately, attitudes are changing. Across the province, people are recognizing the costs of securing clean, pure drinking water and safeguarding the environment. While this is gratifying to the dedicated staff who manage our municipal water systems, they need more if they are to meet the challenges ahead. They need the means to create the strong and sustainable water services that their customers deserve.

THE NATURE OF THE PROBLEM

In delivering water and wastewater services, each community in Ontario deals with a mix of challenges unique to its size, history and location. Nonetheless, Ontario's municipalities all face a number of pressures that, together and over a period of years, could increase costs and risks substantially.

The most serious of these is that water-related assets are wearing out, and most communities are not replacing them quickly enough. The current stock of water and wastewater assets in Ontario is estimated at $72 billion, $20 billion in treatment plants and the rest in distribution and collection systems. Over the next 15 years, water and wastewater investment needs in Ontario are expected to range from $30 to $40 billion. Based on existing information, PIR's best forecast of the need is $34 billion.

The $34 billion is made up of $25 billion for capital renewal, including the $11 billion in deferred maintenance, and a further $9 billion for growth. The Ministry projects that, unless the rate of capital investment increases sharply from the levels of the recent past, Ontario will face a gap of roughly $18 billion between what systems need and what they receive in funding over the next 15 years.

Much of the investment need arises from the age of buried assets – some more than a century old – that are nearing the end of their useful lives. Without that investment, there will be more flooding, more damage to roads, more sewage diverted to rivers and lakes during storms, and more boil-water advisories.

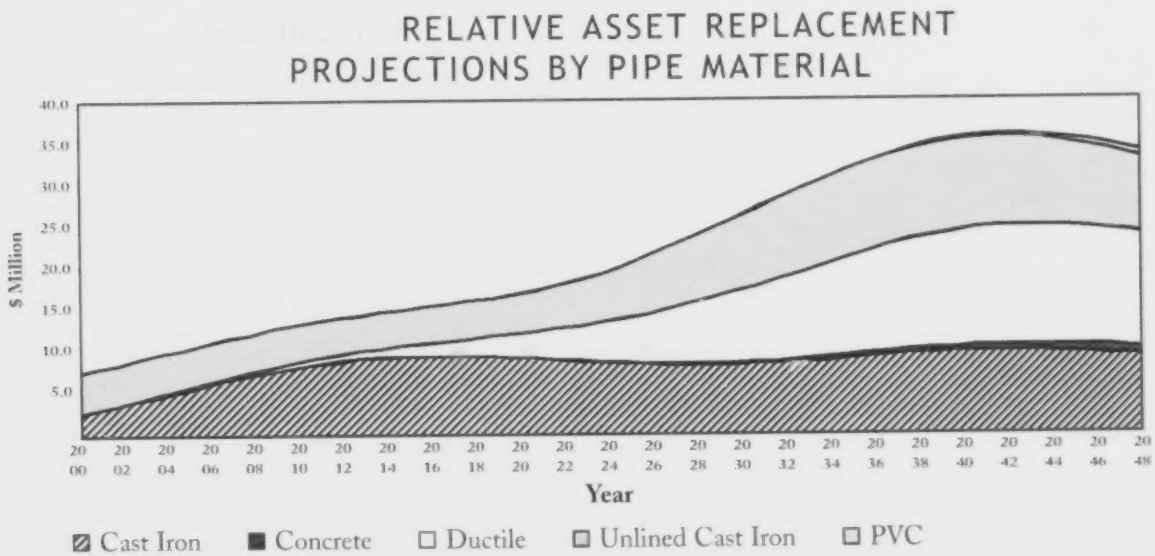
As well, new rules imposed by the Province as a result of the Walkerton tragedy have increased costs and will continue to do so. The additional capital cost to Ontario municipalities has so far been considerably more than $800 million, with more capital investments required. Operating, training and testing costs have also gone up, and systems are grappling with the costs of certification and full-cost recovery plans.[3] While the Panel's mandate does not extend to public health issues, the regulatory regime does have an impact on costs and affordability, which are elements of our mandate.

TABLE 2: CAPITAL INVESTMENT GAP ESTIMATE

Billions of 2004 Dollars

	2005-2019	Annual
Renewal and Replacement of Existing Assets	$25	$1.7
Growth	$9	$0.6
Total Investment Required	**$34**	**$2.3**
Less: investment at current rate*	$16	$1.1
Investment gap	**$18**	**$1.2**

* Based on a 5-year average of expenditures reported in FIR (1999-2003), inflated to 2004 using the Non-Residential Construction Implicit Price Index from the Ontario Economic Accounts.



The above "Nessie curve," prepared by the City of Ottawa water department, shows how the replacement needs relating to pipes of different materials, especially ductile iron, are growing. Many Ontario municipalities face a similar situation.

[3] The lowest estimate of the incremental capital cost of O. Reg. 459 (now O. Reg. 170) is the amount approved under Round 1 of OSTAR, a provincial program announced in the 2000 Budget: $804 million. This does not include certain costs ruled ineligible or the costs in the Greater Toronto Area, Hamilton, Ottawa, Waterloo, Sudbury, Niagara, Thunder Bay, London and Windsor, nor does it include increased operating costs.

There are a number of other pressures working their way through the water sector, or on the way. Liability insurance costs have increased since Walkerton. In future, a public that is increasingly conscious of environmental and health risks is likely to call for higher standards for treated wastewater.[4] The price of electricity, an important input of production, will rise.[5] The need to better manage stormwater is also likely to have an impact. Finally, demographics will play a role, as populations grow in some places and decline in others, and as experienced waterworks staff retire.

It is clearly time for action. The situation is not yet urgent, and with the changes this report recommends most water services in Ontario can become sustainable with neither undue financial burden on customers, nor threats to public health. Without prompt action, however, this relatively painless solution is not certain.

Many municipalities have already begun the work of putting their water systems on the path to financial sustainability. Others are waiting for guidance and leadership. The Panel has concluded that both the Province and the municipal sector itself have important roles to play in finding and applying solutions that will control costs and reduce risks.

MOST USERS CAN PAY AND SHOULD

Consumers are beginning to recognize that water and wastewater rates must reflect all the costs of providing these services. Fortunately, it is not difficult to capture the costs of water services through rates: an individual customer's use can be measured with a meter and billed accordingly.

This makes water different from most other municipal services. In theory, municipalities could charge users for such services as roads, bridges, schools, parks or libraries. But the implementation problems would be huge, and in the case of certain services, like education and child care, there are particularly strong reasons not to use pricing to moderate demand.

Moderating the demand for water, on the contrary, provides a range of benefits that extend well beyond the municipal budget. Water conservation eases the burden on our rivers, lakes and aquifers, allowing Ontario's population and economy to grow without depleting precious water resources. It also reduces the amount of disinfecting chemicals that must be removed from water before it is returned to the environment, and moderates the demand for energy used to pump water and heat it in homes and businesses. As **Figure 2** shows (pg. 10), Ontario's water rates are among the lowest in the world at present. This is in large part because rates do not cover the full costs of service. Every organization and individual with whom the Panel met affirmed the need for people in Ontario to recognize the value of water and conserve it accordingly.

There is a concern, however, that if water rates rise too much, they may no longer be affordable for some residents. To offset to the greatest extent possible the increases that are required to keep systems in good condition and conserve water, governments in Ontario must also look for ways to reduce costs and moderate rates.

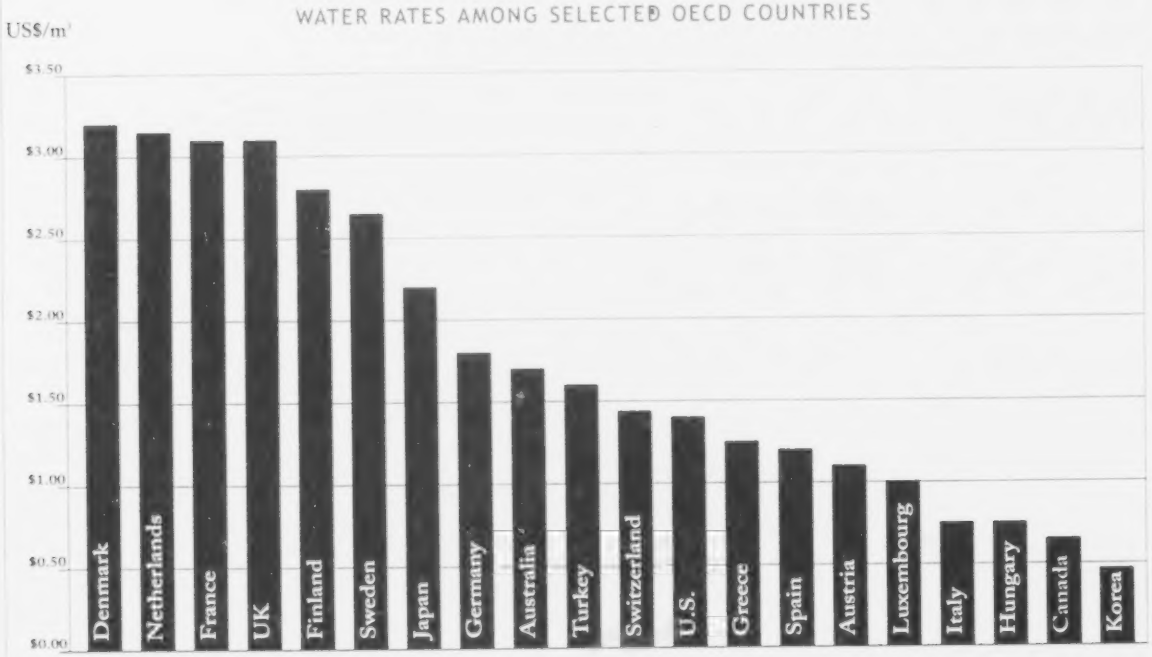
[4] O. A. H. Jones, N. Voulvoulis and J. N. Lester, "Potential Ecological and Human Health Risks Associated with the Presences of Pharmaceutically Active Compounds in the Aquatic Environment," *Critical Reviews in Toxicology* 34 (2004): 335-350. The Canadian Council of Ministers of the Environment (CCME) has established a Development Committee to develop by November 2006 a Canada-wide strategy for the management of municipal wastewater effluent.

[5] Roughly 30 to 40 per cent of operating cost for a water service is electrical power: water and sewage must be pumped, lifted and pressurized.

FIGURE 2: WATER-RATE COMPARISONS

Canada's water rates are among the lowest in the world...

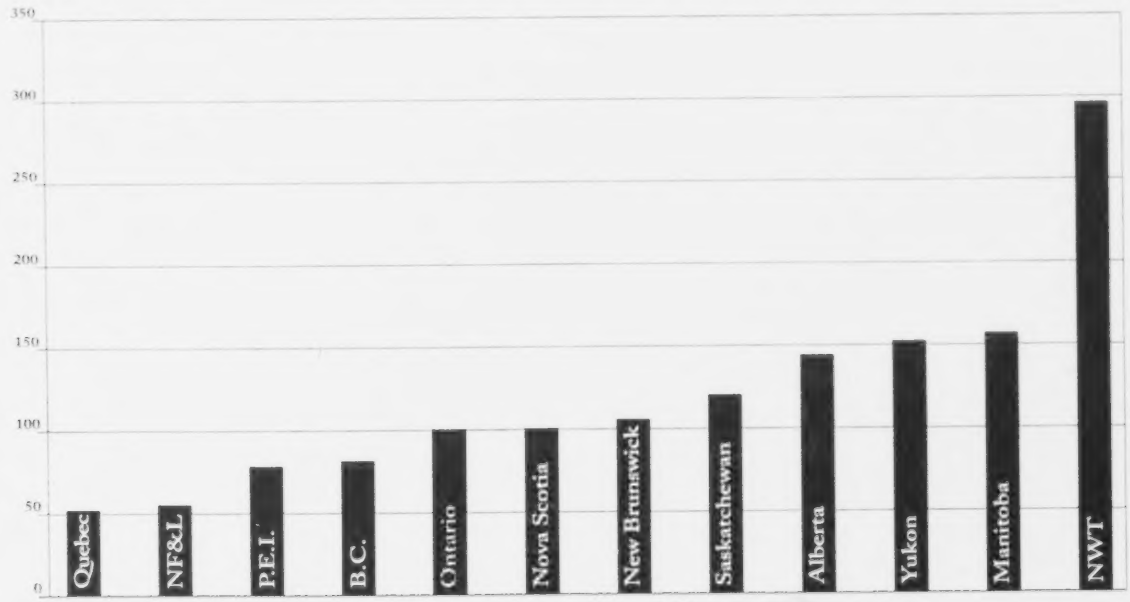
WATER RATES AMONG SELECTED OECD COUNTRIES



Source: OECD Working Paper, 1999

...and Ontario's water and wastewater prices are among the lowest in Canada:

INDEX OF AVERAGE MONTHLY RESIDENTIAL WATER AND WASTEWATER PRICES (Ontario=100)



Source: Environment Canada's Municipal Water Use and Pricing Survey, 1999.

FIGURE 2: WATER-RATE COMPARISONS

Canada's water rates are among the lowest in the world...

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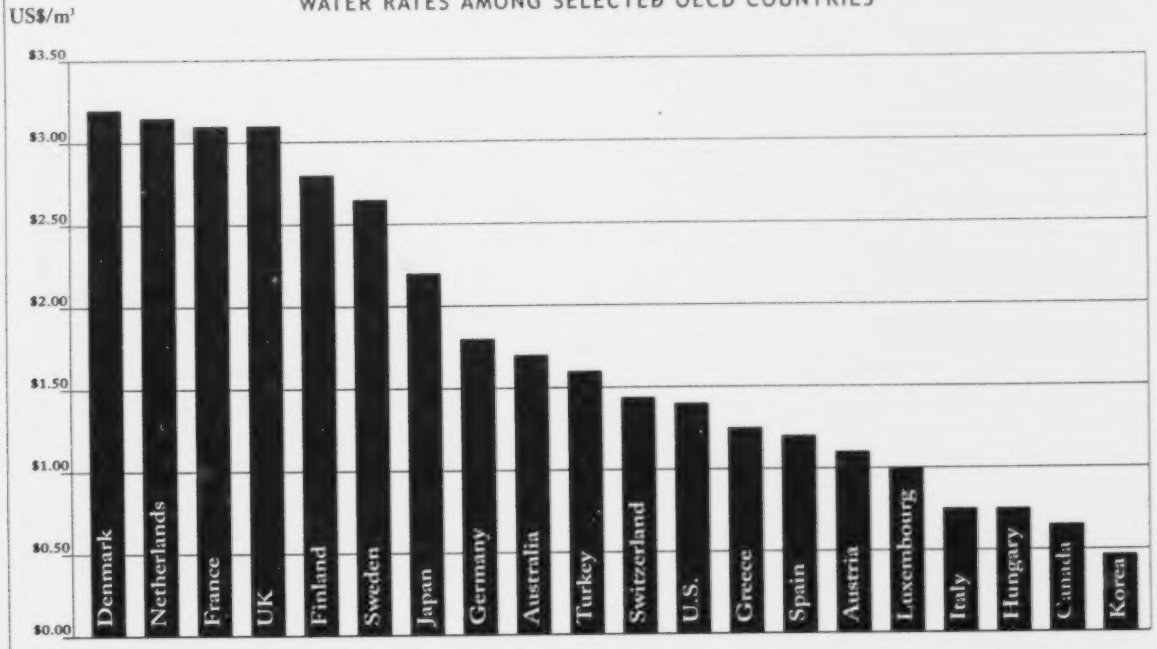

Source: OECD Working Paper, 1999

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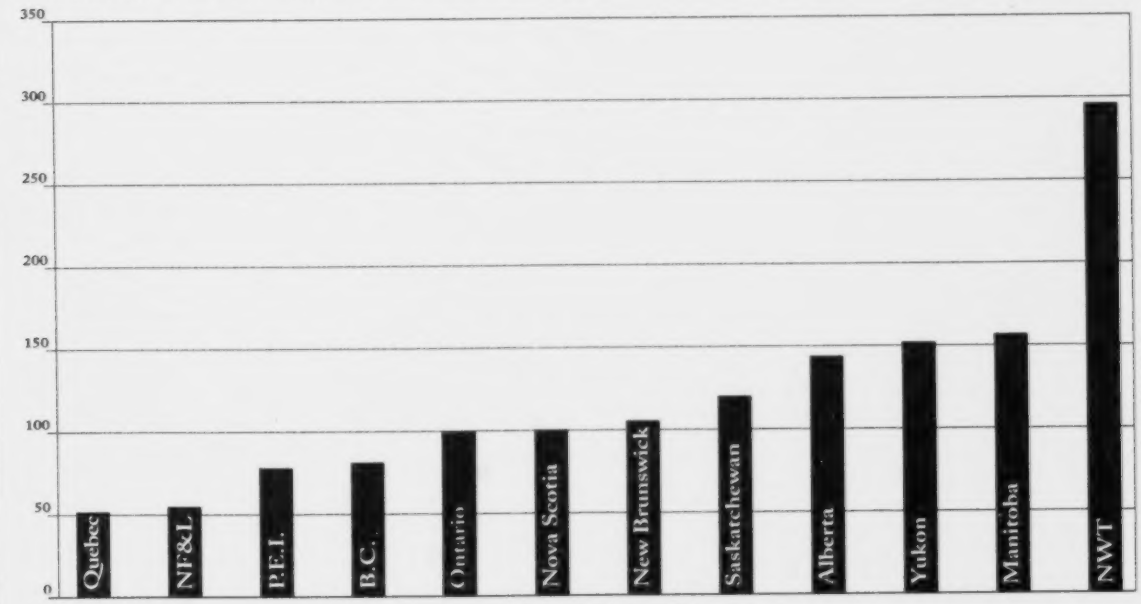


Source: Environment Canada's Municipal Water Use and Pricing Survey, 1999.

THE NEEDED REFORMS

The Panel believes that a wide range of changes to the water sector will be needed to meet the challenges ahead. We have focused on the following reforms to ensure that systems are sustainable and rates reasonable:

The scale and capacity of systems must increase. Systems must join together to better manage risks, increase the depth of their expertise, gain economies of scale and scope, and help the highest-cost customers. There are many ways in which communities can achieve this. Because the answers will not be the same in every part of the province, local communities must develop local solutions – and an objective, professional regulator must ensure that those solutions are comprehensive and rigorous.

Governance must be strong and effective. Water and wastewater systems are becoming increasingly complex, and in most cases – especially after consolidation into larger units – a municipally-owned corporation would be the best vehicle to own these assets. Those who oversee them, whether drawn from municipal councils or private life, need to understand a wide range of issues that are often specific to utility operations. For transparency, the finances of water services should be kept separate from those of their municipal owners. Finally, water services need the flexibility and tools to achieve cost savings through contracting out and other delivery options.

Regulation should be results-based and as light-handed as is compatible with the goal of safe, affordable water services. Ontario's water services will need a new style of regulator that looks at business plans and proposed rates from the perspective of optimal scale and scope, and measures performance to produce improvement. With the creation of the larger water services that this report foresees, and new licensing requirements in place, the focus of water-quality regulation should shift from detailed prescription to the results that systems are expected to achieve. Inspection and enforcement should be carried out by qualified staff who are expert in results-based regulation that takes risk management into account.

Systems must look to their customers for financial sustainability. Consumers should pay the full cost of the services they consume, which will require full metering. This will help to ensure that systems are not overbuilt, conservation is encouraged and nature is respected. With full-cost recovery and improved economies of scale, most water systems in Ontario will be able to rely on their customer base to maintain and operate their assets over the long term. Only where systems are shown to be unsustainable should the Province provide subsidies, and in those cases it should act as trustee of the assets until the system can be made sustainable.

Innovations in technology and training should be used to reduce costs. Active support from the Province will allow water services to benefit from cost-saving technologies in a more timely fashion. There is also a role for the Province to play in making training programs more easily accessible, especially for staff of remote and isolated systems.

The Ontario Clean Water Agency should be revitalized. OCWA's front-line staff have a wealth of skills and experience, but lack of direction has led to uncertainty about its role and increasing competition in the sector has hurt its financial results. OCWA needs a revised mandate, a true arm's-length relationship with the Province and a business-oriented board.

None of these problems or recommended solutions is new. The professionals in the field have recognized them for some time.[9] They further recognize that the longer action is delayed, the more costs will have to rise and the reliability of systems will be compromised. What is needed, then, is simply to get on with the job: the balance of this report suggests how.

---

[9] Canada, Environment Canada, *Currents of Change: Final Report of the Inquiry on Federal Water Policy* (Ottawa, September 1985); J.W. MacLaren, "Fundamental Issues in the Development and Management of Small Water Supply Systems," paper presented at the Third National Conference on Drinking Water, St. John's, NL, 13 June 1988; American Water Works Association, "Financing, Accounting, and Rates," policy statement adopted by the Board of Directors 1965, revised 1982, reaffirmed 1987, revised 1992, 1998 and 2005.

In the nineteenth century, water and sewage services, where they existed, were provided privately, at first by householders.[7] In all but low-density rural areas with good groundwater, however, the limitations of these primitive early systems were made clear by the periodic epidemics that ravaged even well-to-do neighbourhoods.[8]

Municipal takeovers of private companies began in the latter part of the century, just as adequate theories of disease arose. By the first decade of the twentieth century, a consensus on the best way to treat drinking water had developed: coagulation and sand filtration followed by chlorination. But even though people knew what had to be done, wars and the Depression pre-empted public finances for much of the middle part of the century, and water and sewage treatment often went begging.

In consequence, there was a considerable backlog of needs when the Second World War ended. Increasingly, the provincial government asserted leadership. In 1956, it created the Ontario Water Resources Commission (OWRC), with a mandate to build, own, operate, regulate and finance water and sewer systems all over the province. The Commission quickly became a world-ranking repository of expertise – in water engineering, microbiology and public health – at which visitors marvelled. As it chose locations and built plants for the burgeoning communities of the 1950s and 1960s, however, it also came to be seen and resented by many municipal officials as arrogant and unresponsive to local development planning. The OWRC was disestablished in 1972 and its staff and many of its functions were rolled into the new Ministry of the Environment.

Since then, the balance of involvement in all aspects of the water sector has tilted increasingly towards municipalities and other participants, including engineering and economic consultants, academic researchers, and groups such as the Ontario Municipal Water Association (OMWA) and the Ontario Water Works Association (OWWA). A provincial planning and coordinating role ended with the OWRC's demise. Responsibility for many water systems was shifted to municipalities, including the new regional municipalities, with the inducement of generous grant programs. As it turned out, the Commission's research role was handed to MOE just as a revolution in water science began. The first paper in English to suggest that chlorine could produce dangerous by-products was published in Holland in 1974.[9] A torrent of new ideas and approaches followed.

MOE, with a wide range of responsibilities beyond water and wastewater, could not maintain the technological leadership the OWRC had achieved in the water sector. Increasingly, others eclipsed it in the research field. The Ministry's role as the direct owner and operator of water systems ended in 1993, with the creation of the Ontario Clean Water Agency (OCWA), a provincial agency reporting to the Minister of the Environment. Its operating budget declined through the 1990s. Grants became increasingly ad-hoc, and decisions around them were centralized in a provincial agency that focused on all capital projects. Since Walkerton, the Ministry's primary focus has been increasingly on developing and applying regulations. In Chapter 6, this report suggests how that could change to benefit both the Ministry and owners of water and wastewater systems.[10]

[7] Ontario, Ministry of the Attorney General, *The Walkerton Inquiry Commissioned Paper 1 – Water Supply and Sewage Infrastructure in Ontario, 1880-1990s: Legal and Institutional Aspects of Public Health and Environmental History*, by J. Benedickson (Toronto: Queen's Printer for Ontario, 2002).

[8] S. Gwyn, *The Private Capital: Ambition and Love in the Age of Macdonald and Laurier* (Toronto: McClelland & Stewart, 1984).

[9] J. J. Rook, "Headspace Analysis in Water" [translated], *H2O* 4, no.17 (1971): 385-387; and "Formation of Halogens During the Chlorination of Natural Water," *Water Treatment and Examination* 23 (1974): 234-243.

[10] In line with the terminology set out in Chapter 1, in the balance of this report "water services" and "water systems" include both water and wastewater, unless otherwise noted.

THE LEGISLATIVE CONTEXT

The statutory foundation of Ontario's water policy is the *Ontario Water Resources Act* (OWRA). It assigns to the Minister of the Environment and her delegates broad oversight of Ontario's waters, including powers to approve works and facilities, enter property and carry out inspections, make orders and enforce them. Regulations under the Act spell out drinking water quality requirements, licensing of well drillers, permits to take water, sewage treatment plant obligations, duties to collect and report information, and a range of other matters. Decisions of Directors under the Act are important and legally binding, although they may be appealed to the Environmental Review Tribunal.

Since 1990, a number of pieces of additional legislation have changed the water sector dramatically. The *Capital Investment Plan Act, 1993*, created OCWA to own and operate plants. As well, the Act prevents a municipality from transferring ownership of water-related assets to anyone but another municipality without repaying provincial subsidies for all of its water-related assets.

The *Municipal Water and Sewage Transfer Act, 1997*, transferred ownership of some 230 provincially-owned water and wastewater plants from OCWA to municipalities. With the transfer, virtually all water and wastewater systems in Ontario are now owned and controlled by the municipality in which they are situated. At the time of the transfer, many municipalities chose to continue to use OCWA for operations.

The *Savings and Restructuring Act, 1995* brought about the amalgamation of many municipalities. The number of municipalities in Ontario fell by almost half, from 815 in 1996 to 445 today. In most cases, this has led to a parallel consolidation of the ownership of water and wastewater systems, although not necessarily the consolidation of operators or the integration of water operations with wastewater operations.

The *Energy Competition Act, 1998*, had the indirect effect of uniting the water and wastewater functions in municipalities in which a public utilities commission (PUC) had previously provided electricity distribution and drinking water. The Act required municipal councils to set up electricity distribution companies, which resulted in the disbandment of almost all PUCs. Municipalities generally decided to re-integrate water treatment into the municipal structure, with some choosing to contract out service delivery.

OVERSIGHT AND ORGANIZATION

At the beginning of the 1990s, Ontario had a number of models for the governance of water systems. A municipality might operate its wastewater services (and possibly its water services, if there was no PUC) as a municipal department. Regional municipalities had responsibility for water services, although in some this was shared with lower-tier municipalities. In many places, the PUC, which was governed by an elected board, provided drinking water. And for hundreds of mostly smaller systems, the Province was both owner and operator.

In the subsequent decade, between ownership changes, contracting out decisions, and the creation of new municipal units, the number of models for how water-related services might be structured and delivered multiplied. Indeed, a study commissioned for the provincial government in 2002 estimated that more than 650 theoretical combinations and permutations of organizational structures (reflecting both the ownership and operation of systems) could be used in Ontario's water sector. The study recorded 51 different types of arrangement actually in use in 448 municipalities at the time.[11] In the following two chapters, the Panel provides recommendations about rationalizing the organization and governance of the water sector, based on its observations and evaluation of the existing arrangements.

[11] PriceWaterhouseCoopers, *Organization of Municipal Water and Wastewater Systems in Ontario*, available on the PIR website at http://www.pir.gov.on.ca/userfiles/HTML/cma_4_35932_1.html

Like its predecessor, the current provincial government is committed to all of the recommendations made by Mr. Justice O'Connor in the Walkerton Inquiry report. Consistency with that guidance therefore underlies the recommendations of this report.

A number of important policies and pieces of legislation have had an impact on water systems and their owners and operators since the Walkerton tragedy:

- The *Safe Drinking Water Act, 2002* (SDWA) and its regulations impose a licensing/certification regime for drinking water providers. Developing the Drinking Water Quality Management Standard regime has taken several years, but the process now appears to be in the final approval stages and the Ministry of the Environment aims to start licensing in 2006, pending the outcome of consultations.

- Advice on fine-tuning the regulations in respect of the smallest communal systems was assigned to the Advisory Council on Drinking Water Quality and Testing Standards, set up under SDWA. The Council's report to the Minister of the Environment was released on March 22, 2005.

- On August 1, 2004, strengthened standards, requiring all water and wastewater operators to be certified, became effective under SDWA regulations. Certification of drinking water and wastewater plant operators had been initiated in 1987 and made mandatory in 1994 for all non-grandfathered operators in municipal systems. MOE has set a deadline of May 14, 2006 for all grandfathered operators to pass certification exams. Using 2002 figures as the base line, half of all grandfathered drinking water operators have recertified to date.

- The *Sustainable Water and Sewage Systems Act, 2002* (SWSSA) and its associated regulations will require municipalities to develop full-cost recovery plans and set their water and wastewater rates accordingly. These are to be based on asset management plans that SDWA requires be drawn up and certified by a professional engineer. The relevant ministries are working to develop the elements of full-cost recovery planning.

- In June 2004, the Province posted draft drinking water source protection legislation on the Environmental Registry for public comment. In addition to public submissions, it has recently received the reports of two working groups which it convened, one on the technical aspects and the other on implementation.

- The *Nutrient Management Act, 2002* and its regulations require farm operators to develop nutrient management strategies as part of source water protection. Large livestock operators in Ontario must be in compliance with the Act by the end of this year. Phase-in of additional farms will be done on the basis of risk assessment. The legislation, and source protection in general, has an impact on the quality of water that municipalities draw, and therefore on their costs to treat it.

- The Province has also introduced the proposed *Places to Grow Act* and passed the *Greenbelt Act, 2005*, both of which aim to encourage more compact land use. The latter creates a "greenbelt" in the Greater Golden Horseshoe (the area extending from the Niagara River around western Lake Ontario to Peterborough and Cobourg). The policy direction of the *Places to Grow Act* should help to prevent the further development of small, scattered low-density communities that are costly to service.

- The Walkerton report discussed the need for those overseeing and running drinking water systems to have a basic understanding of their roles as stewards.[12] The Province made an owner's and operator's "standard of care" a statutory requirement under Section 19 of SDWA, which has not yet been proclaimed.

- The current government has committed to ban land application of untreated septage, which is the generic term for waste from portable toilets, holding tanks, septic and aerobic systems. O. Reg. 347 under the *Environmental Protection Act*, which became effective on October 30, 2003, placed an immediate ban on the land application of portable toilet waste. MOE had earlier banned the spreading of any septage on land in winter, which has created a need for winter storage facilities. Options are currently being studied for handling septage from all sources, including upgrading existing sewage treatment plants.

One effect so far of this evolving legislative environment has been to encourage many smaller systems to contemplate ways of reducing cost and risk by joining forces with their neighbours or contracting out operations and maintenance. This is the subject of the next chapter.

Certification of plants and operators and full-cost recovery plans constitute a good starting point for the long-term health of water services. The Panel recommends in Chapter 6 several improvements to a basically sound regulatory framework.

[12] O'Connor, *Walkerton Inquiry* Part 2, 296.

4 STRUCTURE, CAPACITY AND SCALE

As providers of water services look at how to fund the investments to bring their systems into good repair, while balancing the need to keep rates affordable, they must also deal with an increasingly complex policy and regulatory environment. The Panel has concluded that managing both the costs and risks in this rapidly changing sector calls for new approaches: in the ways that water services are organized, structured and governed; in the ways that plants are designed, built and run; and in the ways that technology is developed, approved and used.

The first step is to increase scale and capacity in the sector. Concerns about costs, rates and risks are felt most sharply in the smallest communities, which are often in isolated parts of the province. Where incomes are below the provincial average and the customer base limited – which would describe many small communities – there are fears that residents may simply not be able to afford water.

In most parts of the province, water services can gain the scale they need by joining forces to create larger water service areas. This will allow access to the expert staff and advice needed to comply with new regulations and meet the statutory standard of care. These larger water services will be financially stronger and more sustainable over the long run. They will also benefit from a broader customer base that can help protect the customers of any small, high-cost systems in the service area.

How systems might combine and consolidate to achieve these benefits presented the Panel with its greatest challenge. While the greatest cost savings arise where infrastructure can be physically joined, in many parts of Ontario this is impossible. Even attempts to save money by sharing technicians will fail if driving distances are so great they are on the road more than on the job. The Panel recognized that for the exercise to work, it would have to take into account a multitude of local conditions, risks and needs.

This is why the Panel concluded that a locally-driven, bottom-up approach is needed, and the municipal sector itself must take the lead. The counties, towns and cities of Ontario have the skills, local knowledge and, for the most part, the professional resources to develop the best possible local solutions. To ensure, however, that the exercise happens in a timely and rigorous fashion, and that issues crossing municipal boundaries are addressed, the Panel also believes that the involvement of a regulatory body with the authority to make change happen is essential.

TABLE 3: MUNICIPAL WATER PLANTS BY POPULATION SERVED (2002)

Population Served	Number of Plants	Percentage of Plants
0-4,999	555	75.7
5,000-9,999	84	11.5
10,000-34,999	54	7.4
35,000-99,999	23	3.1
100,000 +	17	2.3
Totals	**733**	**100.0**

Source: Ministry of the Environment

Note: Includes water plants owned (1) by the private sector but operated by a municipality and/or serving a municipal population, and (2) by local services boards.

TABLE 4: MUNICIPAL WASTEWATER PLANTS BY POPULATION SERVED (2000)

Population Served	Number of Plants	Percentage of Plants
0-4,999	316	69.1
5,000-9,999	56	12.3
10,000-34,999	43	9.4
35,000-99,999	29	6.3
100,000 +	13	2.8
Totals	**457**	**100.0**

Source: Ministry of the Environment.

Tables 3 (pg. 17) and **4** make it clear that a few major urban systems, like those of Toronto, Hamilton and Ottawa, provide service to a large share of the province's population. At the other end of the scale, Ontario has hundreds of small systems that may serve anywhere from a few dozen to a couple of thousand customers.

The experience in Ontario, as elsewhere, is that smaller systems tend to present the greatest challenges from a risk-management perspective. This is not because staff in smaller communities are less responsible or competent as a group. It is simply that larger systems have more depth of staffing and expertise, and a greater ability to invest in training, sophisticated monitoring and back-up systems.

Test results from the Ministry of the Environment show a correlation between system size and the likelihood a sample will meet quality standards (**Table 5**, opposite).

These results reflect the fact that drinking water in Ontario generally meets high standards. However, the increasing rate of exceedances as population falls shows that larger water services are able to put more resources into managing the risks that result in an adverse sample. This is consistent with the findings of the Environmental Protection Agency in the U.S., which notes that systems with fewer than 10,000 customers have increasing difficulty meeting standards.[13]

The Panel also talked to professionals in the sector about their experiences and observations not just in Ontario but elsewhere. In their view, larger operators can generally respond faster and more effectively in an emergency, because they have more staff, equipment and expertise. Emergency response capability is critical: as more than one expert told the Panel, it is not so much the day-to-day running of a plant that poses the greatest threat to public health – it is what happens when things start to go wrong.

The Panel viewed the greater risk-management capacity of larger services as critical to its entire view of how the water sector must change.

The Panel heard repeatedly about small communities in which a large share of residents were on fixed incomes or depended on a single employer. In a larger system, costs are allocated over a larger customer base, which usually provides more diversity in income levels and more income sources. This improves the financial strength of the system.

[13] United States Environmental Protection Agency, Office of Water, *National Characteristics of Drinking Water Systems Serving Populations Under 10,000*. Prepared by The Cadmus Group, Inc. (EPA 816-R-99-010), July 1999. Available: http://www.epa.gov/ogwdw/ndwac/smallsys/smallsys.pdf [March 22, 2005].

TABLE 5: MICROBIOLOGICAL EXCEEDANCES AND SIZE OF SYSTEM, JUNE 2003-MAY 2004.

Population Served	Number of Drinking Water Systems	Total Samples	Total Test Results	Exceedances per 10,000 tests
<5,000	546	104,692	310,376	33
5,000-10,000	58	20,220	56,103	28
10,000-50,000	70	41,979	128,205	26
50,000-100,000	19	19,819	54,375	15
>100,000	33	63,602	175,341	15
Total	**726**	**250,312**	**724,400**	

Source: Ministry of the Environment

Note: A test result is a value for parameter that is tested for. One drinking water sample can have multiple test results (for example, if one drinking water sample is tested for *E. coli* and heterotrophic plate count, this drinking water sample will have two results).

There is also much greater ability to provide cross-subsidization in a larger system, so that water rates for customers of the smallest systems within the larger unit do not become excessively high. This is more than a theoretical observation: the Panel noted that few, if any, lower-tier municipalities in Ontario have set rates that eliminate or even reduce differences in rates across their entire customer base, whereas this is a common practice in single-tier municipalities and those upper-tier municipalities that have responsibility for water rates. Chapter 8 discusses in more detail why and how cross-subsidization might be used to moderate rates for some users.

Economies of scale arise from the lower capital costs per customer of larger water and sewage treatment plants and, to a lesser degree, from lower operational costs. Economies of scale in water distribution and sewage collection decline as systems grow, and disappear at relatively small distances from treatment facilities. The literature on these complex topics is reviewed in Annex D.

Scale economies arise from matters such as bulk procurement of chemicals and supplies, cooperation across a number of municipalities and systems to negotiate better prices for other inputs such as testing, operator productivity, opportunities for automation, and the like. Larger systems are much more likely to have engineers and highly skilled

> "Throughout Ontario there are many water pollution control plants and water supply plants with excess capacity. Often, however, the supply of water and sewer services to existing development in neighbouring municipalities cannot be achieved, as the municipalities are not able to reach a mutually acceptable agreement regarding the sharing of services."
>
> Robert M. Sweet, Warden, County of Renfrew

operators on staff, and microbiologists and public health specialists either on staff or on instant call than are smaller systems. On operations, therefore, the lower costs attainable by larger systems tend to go hand-in-hand with lower public health risk.

There are also savings to be found on the capital side. In Ontario, many small plants were built because the alternative of bringing water from another plant was prohibitively expensive. However, some small plants were built – and their construction supported by provincial grants – despite the fact that a nearby municipality had enough capacity to provide service. This is an inefficient use of capital, unfortunately supported by provincial granting policies. In future, broader-based planning should help to ensure better decisions. (So will an end to inappropriate senior government subsidies that distort sensible decision-making, as discussed in Chapter 7.)

Economies of scope are also available where a single entity has responsibility for the entire suite of water services: sourcing, treating and delivering drinking-quality water, and collecting, treating and disposing of sewage, storm- and melt-water. Larger systems can afford a higher quality of management, financial and engineering planning and execution, and public reporting than small ones, and one way to become larger is to include all related water services in one utility.

Unquestionably, the smallest plants – those serving, roughly, fewer than 2,000 customers – have the highest unit costs, and that threshold can be expected to rise with increasing regulatory and technical complexity. Capturing economies of scale at the small end of the size range is essential to addressing the affordability problem. Many systems with the highest costs are located in communities with lower-than-average incomes, where affordability is a large concern.

More effective contracting

The savings associated with consolidating systems are also available, to a large extent, when the running of a number of systems is contracted to a single operator. In fact, in trying to create their own "hub-and-spoke" models, where at least one larger town is included in a service area, contractors, including OCWA and its private-sector competitors, hope to exploit operating economies of scale.

Contracting involves careful negotiation and contract management to overcome the problems of having two different parties own and operate assets, which is discussed in the following chapter. In this case, coordinating the contracting at a higher level will minimize the costs of developing and managing the contract. It may also help to ensure a better balance of risks and rewards between owners and operators.

Contracting out has proven to be a good solution in many areas and should continue. However, by itself it does not address the issues of rate cross-subsidization, coordination across boundaries, or the joint optimization of capital and operating expenses.

More appropriate technology

By taking a coordinated approach, water services will be better able to act on the need for alternative technologies. This is especially important where a small, high-cost system cannot physically connect to a lower-cost one. In these instances, point-of-entry treatment of water may be a better solution than a central system.[14]

Where a small plant must remain in place, innovative technology can allow remote operation whereby skilled workers monitor and even control plants from a central location. EPCOR, the energy and water services company owned by the City of Edmonton, has demonstrated a grasp of the advantages for cost, reliability and risk management stemming from remote operation of both water and wastewater plants.[15] So has OCWA.

[14] R. Boussert and T. Schmit, "Tradeoff Between Economies of Size in Treatment and Diseconomies of Distribution for Rural Water Systems," *Agricultural and Resource Economics Review* 27, no. 2 (1997), 237-247.

[15] R. Shariff et al., "Centralized Remote Operation of Multiple Water and Wastewater Plants," Information Management and Technology Conference Proceedings, Kansas City, April 2002.

Convincing regulators that such changes would not put the safety of the water supply or the quality of the environment at risk, however, is likely to be easier when backed up by the resources of a larger service.

Under SWSSA, every municipal water system owner in Ontario must prepare a plan to move to full-cost recovery. Looking at systems on a combined basis will reduce the costs of preparing these plans and provide more integrated solutions and better outcomes. It will also save considerable time. Without moving planning to a higher level, the process of analyzing and approving full-cost recovery plans from the hundreds of systems currently in place would be unwieldy at the least, and probably unworkable in a reasonable time frame.

Similarly, in future, combining the planning for a group of facilities that draws from the same water source or discharges effluent into the same receiving body should help to reduce costs and bring about better environmental results.

The Panel spent considerable time on two specific questions around combining systems: Should responsibility for water and wastewater assets move uniformly to a higher level in southern Ontario? And how might greater scale be achieved in the North, where there are no upper-tier governments?

The first option considered was to maintain the status quo, and hope that full-cost recovery planning, an increasing regulatory burden and other policy instruments would get the job done. The conclusion was that it might. But it would take too long and consolidations would happen on a piecemeal basis. This would delay development of multi-county and cross-boundary solutions. In the North, with no county to default to, combining systems was much less likely to happen and, if it did, would take even longer than in the south. Further, the Panel, recognizing that the current approach to water-quality regulation is overly costly, wanted to recommend a shift to a results-based system – but felt that we could do so only if water services were large enough

> "There are increasing signs that small municipalities would be happy to hand over their water systems because of the increased standards, costs and potential liabilities...legislation to force such an approach may be the only way to ensure it takes place."
>
> Ontario Water Works Association and Ontario Municipal Water Association

to provide the necessary risk-management capacity. Finally, if consolidation didn't happen, risk and costs in the sector could only grow: despite some sterling examples to the contrary, the Panel observed that the majority of systems serving fewer than 2,000 customers are struggling. Higher standards now in development will stretch their resources even further.

At the other end of the spectrum, the Panel might have recommended immediate consolidation, through legislation, at the county level in the south and into service districts in the North. This, too, presented problems. It ignored the clusters of communities in useful hub-and-spoke configurations that had nothing to do with county boundaries. It would not bring separated municipalities within county boundaries into the process or guarantee that counties would cooperate across boundaries. It looked like overkill in those counties that have only one or two small systems. It presented little or no opportunity for municipalities to tailor solutions to their needs – and if there is one fact about the water sector that the Panel has absorbed, it is that every system is unique. Finally, it would be a solution enforced from above; but, as amalgamation of municipalities made clear, an approach developed by those it affects will always win greater acceptance.

In the end, the Panel decided that municipalities must develop their own solutions. For the process to be effective, however, it has to happen at a high enough level and in a framework containing enough tension to ensure not just that solutions are developed, but that the process is comprehensive, brings all the interested municipal parties to the table, and results in a reasonable time in solutions that reduce costs and risks to the greatest degree possible. The Panel feels that this is best achieved through a business planning process covering, in the south, the geographical area of each county, regional municipality and single-tier municipality not within county boundaries, and in the North "clusters" of communities. This is in each case the minimum area to be considered in business planning, and municipalities leading the planning are encouraged to broaden it wherever possible and practical. In all cases, local First Nations communities should be invited to join the planning exercise.

Where water and wastewater are the exclusive responsibility of a single-tier municipality not within the boundaries of a county, business planning will be reasonably straightforward. The major new elements will be to consider the benefits of creating a water service corporation, which is discussed in more detail in the following chapter; and to work with neighbouring municipalities, where appropriate, to look for cost savings and reduce environmental impacts. Regional municipalities have responsibility for most water-related services and assets, and this report recommends that their role should be strengthened to give them responsibility for all water-related services. They should therefore carry out the business planning for the municipalities within their boundaries.

Elsewhere, however, greater change will be needed. To create appropriate business plans, counties need to work with those of their lower-tier municipalities that have municipal systems and with the separated municipalities within their boundaries. In most instances, counties should take the lead in creating the business plan because of the complex needs relating to their small and widely scattered existing systems. Where the customer base of a separated municipality is significantly larger than that of the county surrounding it, however, the planning should be done jointly.

The Panel believes that through business planning, municipalities are likely to find opportunities to reduce risks and costs and increase professional and technical capacity by consolidating systems, especially where counties, their lower-tier municipalities and separated cities are involved. This report recommends the creation of an Ontario Water Board, which is described in more detail in Chapter 6. A large part of its role will be to assess whether business plans are designed to act on these opportunities in a way that makes the most sense for the municipalities involved. Any solutions involving consolidation call for careful thinking about the governance and accountability model. The following chapter discusses the value of forming a corporation to govern consolidated assets.

In the North, water service clusters, which are discussed below, would draw up similar plans; however, because systems are smaller, economies of scale more difficult to achieve, and upper-tier governments do not already exist, consolidation of ownership may not be feasible.

It is critical to note that the business planning process would not happen in addition to the full-cost recovery plans required under SWSSA. Instead it would, in effect, bring together all of the local information and planning done to date and integrate it at a higher level. It would include the plans required under SWSSA, but for the planning area as a whole, not each individual municipality. The plans would still need to be reviewed by an auditor on behalf of the water service, and the asset management plans within the business plan would need the approval of a professional engineer.

However, the business plan would contain additional elements. For example, it would deal with any integration of existing systems that was required and the extent to which operations would be contracted out. It would have to show how consistency with both provincial growth-management policies and the municipal official plan would be ensured, recognizing that the latter must also be aligned with source water protection needs. While the business plan would cover

all of the water systems within the county boundaries and cluster areas, it would also look at the options for working with other neighbours to further save costs. It would include a long-term outlook, including any major new investment needs, that formed the basis of the proposed rate structure in the business plan. The rate structure would also address whether and to what degree rates in the highest-cost systems would be cross-subsidized from the general customer base.

The initial business plan would also set out a governance, accountability and financial model. The Panel would expect that in most places, a corporatized utility, as discussed in Chapter 5, would be the most appropriate governance model. In particular, a corporatized utility may be the only feasible way to deal with debt that is moved to the county or cluster level when assets are transferred. If this option is not chosen, the plan should explain the reasons.

As the business plan is developed, lower-tier municipalities in counties and all communities in clusters, including local services boards, should be closely involved, particularly in developing the governance and accountability model. This integrated planning process will save the cost of each municipality with a water system drawing up an individual full-cost recovery plan. It will also strengthen local accountability.

The Panel believes that for the business planning process to be fully effective, the Province must create an Ontario Water Board. Chapter 6 outlines the recommended powers and activities of this proposed body. However, the Panel notes that the planning process can begin before that board is created, under powers available to the Minister of the Environment through the existing provisions of SWSSA.

Recommendation 4.1
The Province should require, under sections 3, 4, 9, 10, and, if necessary, 11 of SWSSA, the creation of business plans for submission to the Ontario Water Board. These plans should be produced by single-tier municipalities not located within the boundaries of a county; by regional municipalities; and by counties, working in cooperation with the lower-tier municipalities and separated single-tier municipalities within their boundaries.

Recommendation 4.2
The geographical basis of a business plan may, if agreed with the relevant jurisdiction(s), extend beyond the boundaries of the county, single-tier municipality or regional municipality, and should contain wherever possible a minimum of 10,000 customers.

Recommendation 4.3
The business plan should be consistent with all requirements of SWSSA and SDWA, with provincial growth management policy, and with municipal official plans; should include a governance, financial and accountability model and a proposed rate structure; and should take into account:

- efficiencies available through technological choice and innovation as well as economies of scale and scope;
- efficient provision of service, including existing or revised contracting possibilities;
- natural economic communities, such as centres which draw commuters from the surrounding area;
- management of septage on a county or multi-county basis; and
- the governance principles in Recommendations 5.1 through 5.5.

For those municipalities located in Muskoka and the watersheds of Lake Simcoe and the Grand, Thames and Rideau rivers, the plan should address the need for cooperation to deal with pollution concerns.

Recommendation 4.4
The business plan should be approved by county or regional municipal council and by the council of any included separated city and submitted to the Ontario Water Board by June 30, 2007.

Recommendation 4.5
The Water Board may require deficiencies in a business plan or group of business plans to be made good, without relaxing the time line, before it accepts the business plan(s) and begins detailed analysis.

Recommendation 4.6

The Water Board should no later than June 30, 2008 render a decision on the business plan. Where, despite requests for the repair of deficiencies, an adequate plan has not been submitted, or the Board does not approve the plan that was submitted, the Board may exercise the powers under Section 12 of SWSSA.

The map on page 29 shows, for southern Ontario, the geographical boundaries of counties, with separated cities and towns highlighted; urban and rural single-tier municipalities outside county boundaries; and regional municipalities. This approximates the levels at which business planning in southern Ontario should take place.

While the Water Board will have a number of permanent responsibilities, this first initiative will call for more (and possibly different) resources than it will need on an ongoing basis. Further, these activities will be taking place as the Water Board itself is being set up and staffed. For at least this phase, the Board should contract out as much of the work of assessing business plans as possible.

PLANNING ACROSS BOUNDARIES

There will remain a provincial role for regional-level coordination and planning. Some areas face complex local issues that call for a solution that crosses county lines. Examples are the watersheds mentioned in Recommendation 4.3, which are already overloaded with nutrients, and the Canadian shore of Lake Ontario, where the juxtaposition of water intakes and sewage outflows requires regional solutions. System owners will need to work together on infrastructure needs in these areas, and for this reason MOE should assist the new water services to coordinate their business planning process. It may be that, over time, the entities involved will want to move beyond collaboration on planning and set up continuing joint bodies, but this is for the future.

One legislative constraint to greater cooperation should be removed: a section of the OWRA that requires a public hearing for sewage systems crossing municipal boundaries. This should properly be a matter for business plans.

Recommendation 4.7

Section 54 of the OWRA should be repealed.

JOINT PIPELINES

In southwestern Ontario, there are four pipeline systems that deliver water to a number of municipalities, sometimes across county boundaries. They are the Lake Huron and Elgin systems, serving London, which is a separated city, and a number of communities in Middlesex, Huron and Elgin counties; the Union pipeline, which serves a number of smaller municipalities in Essex County; and the Lambton system, which serves Sarnia and several other communities in Lambton County. These schemes can provide relatively low-cost water to communities that participate in them. (Chapter 10 discusses a somewhat different pipeline that runs from Collingwood to Alliston.)

The joint boards governing these systems consist of representatives of the municipalities that share in ownership of the pipeline and related treatment assets. Business planning in these areas will need to take into account these existing situations and their governance. A key question is whether to move responsibility for the pipeline system to the county level. In the simplest approach, this would consist of transferring to the county the participating municipalities' ownership in the system. The same representatives could sit on the joint board, but would represent the county, as opposed to their individual municipalities. The activities of the board would need to be coordinated with those of the county water service, which would have responsibility for all water-related assets in the county, including wastewater systems and non-pipeline drinking water systems. Such an arrangement might help to improve decisions around how and when to extend the pipeline to existing communities in the county, as well as whether to extend the pipeline to support new growth and development.

Questions have been raised about whether, over the longer term, joint pipelines drawing from the Great Lakes should be used to accommodate future growth in areas that would otherwise have to rely on other sources.

The argument is that such large-scale schemes offer benefits over the alternatives. They can relieve pressure on rivers, smaller lakes and aquifers. This has environmental benefits because these other sources are more likely to be harmed by heavy water takings. There may also be savings in treatment costs because water from the Great Lakes is generally cleaner to start with, especially compared to surface water sources that have been polluted by effluent discharge and farm and industrial run-off.

While this is true, the Panel feels that it would be wrong to regard pipelines as a cure-all for growth pressures. While treatment costs and long-term environmental impacts may be lower, large-scale projects also involve huge capital costs and significant ongoing power costs for pumping.[16]

The most important considerations around pipelines, however, relate to more fundamental issues. The Panel believes that the first and most critical step to be taken by communities facing growth-related water problems is better demand management. As discussed in more detail in Chapter 8, demand management can significantly reduce pressure on existing water sources and allow the delay of major capital expansions.

A further step that municipalities and the Province must take is to better manage the overall impact of growth and the pressures it brings – not just on water services but on roads and other public services. The proposed *Places to Grow Act*, along with municipal official plans, is the appropriate mechanism to put into action provincial policy on growth management.

Once the new water services recommended by this report have taken steps toward greater conservation, and municipalities have drawn up growth plans consistent with provincial policy, the long-term needs relating to the provision of water and wastewater services should be much clearer. At that point, a large-scale pipeline, possibly in cooperation with neighbouring water services, may provide a possible solution for some communities. The decision should be made on the basis of the economics and environmental impacts of all options available. Because of the large area that might potentially be served by a pipeline, there may be a role for provincial coordination through MOE and PIR.

THE NORTH

Northern Ontario presents unique challenges to achieving increased scale and capacity. First, all municipalities are single-tier – there are no counties and consequently little history of working together through an upper-tier arrangement.[17] Second, systems are usually small and widely dispersed. Third, many communities are declining in size and wealth. Finally, some communities represent the outcome of past decisions approved by provincial governments of the day about where to locate workers to carry out resource extraction – without much thought for what would happen when the resource was depleted.

As in southern Ontario, coordination of efforts to achieve greater scale can help to alleviate costs and risks. Clusters of communities should work together on business plans that would generally follow the principles set out in this chapter. The Panel observes some fairly straightforward choices for the composition of such clusters, each involving a principal municipality and communities within a reasonable distance, at least in the northern Ontario context. A list of potential groupings is included as Annex E, and the map on page 28 illustrates the clusters.

[16] Another negative that is sometimes raised is that pipelines can cause "inter-basin transfers," whereby water from one watershed is treated and returned to another; however, in the view of the Panel, this should not be an issue because all of southern Ontario lies within one basin, and all water flows ultimately into one of the Great Lakes.

[17] The current District Social Services Administration Boards (DSSABs) do provide service over more than one municipality.

Clustering can save on operating costs, provide greater capacity and help to attract and keep qualified contract operators. Through the business planning process, clusters should also focus on efficient decisions around capital spending.

Recommendation 4.8
The principal municipality in each cluster in the North should take the lead in developing the business plan, following the process and time frame set out in Recommendations 4.1 through 4.6 and involving municipalities and local services boards, and First Nations communities in the cluster as appropriate.

It is understood that finding 10,000 customers sufficiently close to each other will be a problem in many areas. For that reason, and without an upper-tier framework, it will be hard to achieve all of the benefits of greater scale. As a result, and with the high costs of water services across the North, the Panel expects there will be an ongoing need for financial help from the Province for some systems. Unsustainable systems are discussed in Chapter 7.

The job of consolidation in regional municipalities is almost done. At present, five of the eight regional municipalities have exclusive control over both water and wastewater services. However, in York, Waterloo and Niagara Regions, lower-tier municipalities may be involved in sanitary sewage collection. In some places bulk water supply is a regional municipality function, while lower-tier municipalities look after delivery and billing. These split jurisdictions appear to be anachronisms and have led, in at least one case that the Panel encountered, to friction between a lower-tier community and the region. As well, no region has exclusive jurisdiction over stormwater collection and works – lower-tier municipalities may be involved in this area, including setting their own bylaws. Stormwater systems have an impact on water quality and treatment needs and on wastewater rates. Consistency needs to be brought to all of these arrangements.

Recommendation 4.9
The *Municipal Act* should be amended to give all Regional Municipalities exclusive jurisdiction over all elements of the water and wastewater sector.

The main costs of the business-planning exercise will relate to preparing the asset inventory and management plans. The municipal sector is already paying the costs of additional regulations since Walkerton, and provincial funding will be needed to help them cover the additional costs of preparing business plans.

Because some counties and municipalities have already started to do this work, a fair approach to financial support is a uniform per-customer amount, based on the number of customers to be served. The costs across the province will be similar enough that the amount of the support can be consistent.

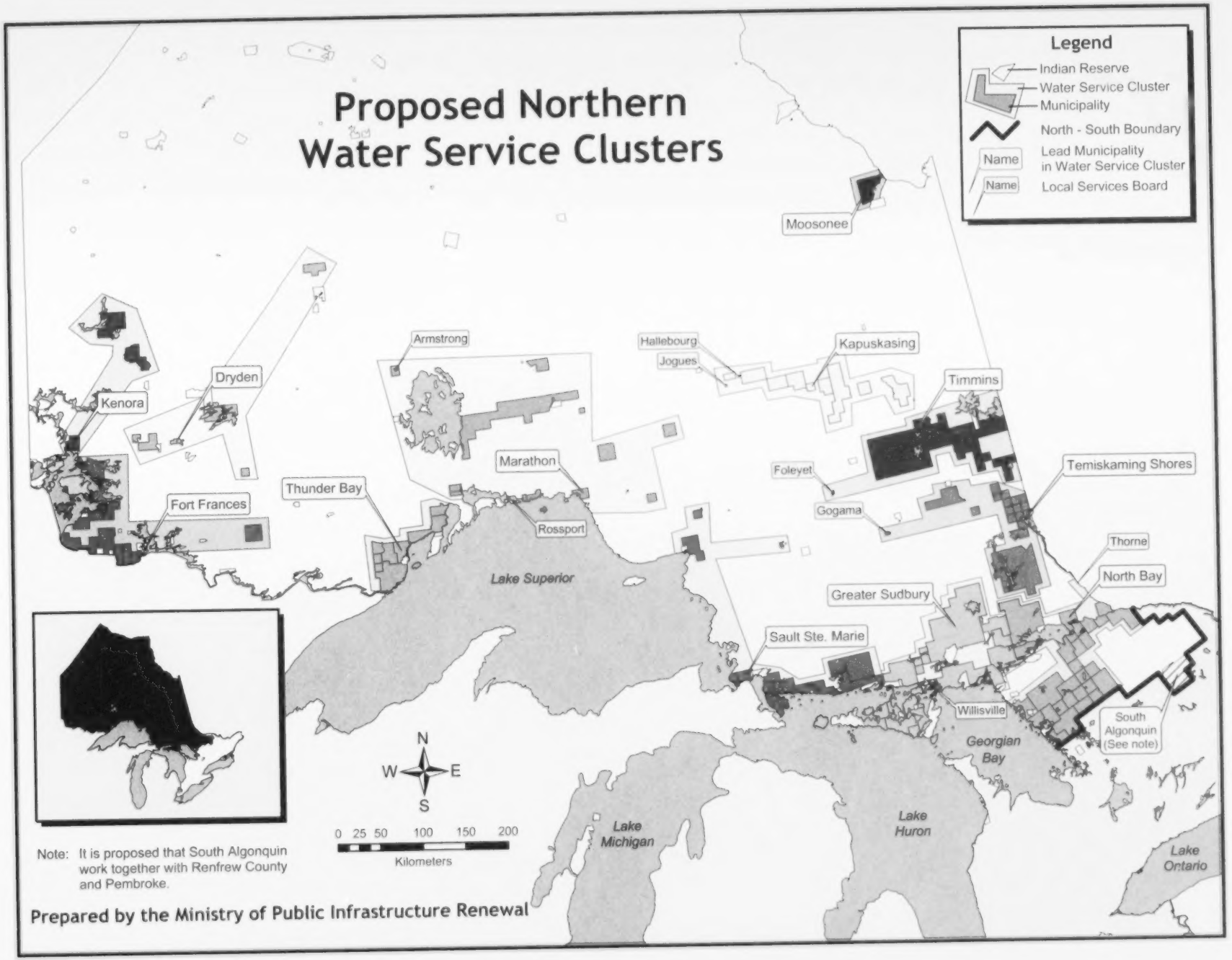
Recommendation 4.10
The provincial government should provide one-time financial assistance consisting of a uniform per-customer grant for the total customer base covered by each business plan, to be paid when the Water Board accepts the plan.

It should be noted that a plan is accepted when the board judges it to be complete and comprehensive, and can begin its analysis of the proposals it contains leading up to its approval (or rejection). The funding should go, upon acceptance, to the municipality or municipalities that led the planning exercise and should be distributed in line with the costs incurred in preparing the plan.

Some participants in the municipal sector have already recognized the benefits of greater scale. The Eastern Ontario Wardens' Caucus, representing 13 rural upper-tier and single-tier municipalities, has endorsed greater integration, although it does not believe this should go beyond the county level. The joint boards governing pipelines also reflect the greater scale needed in overseeing large systems.

Others are reluctant to see any change: they worry that local accountability will be diminished; they feel autonomy over water is tied to economic development, even if autonomy means higher rates; or they are concerned that consolidation would send the signal that their systems are unsafe or substandard. The Panel recognizes these concerns, but believes that in going through the coordinated planning process this report recommends, including the need for accountability to local communities, officials will come to appreciate the benefits of larger size and to manage those concerns.

Provincial policy has also played a role in the current structure of water and wastewater services. Historically, there were few municipal water and wastewater systems within counties, which were largely rural. The Province, in giving water service responsibility to the more urban regional municipalities when they were created, acknowledged that greater scale was important. However, when ownership of provincially owned water assets was transferred to local municipalities in the late 1990s, despite the increasing urbanization of many formerly rural areas, assets were turned over to lower-tier municipalities. As urbanization has accelerated in some rural areas, and all small systems have to deal with new challenges, it is time to revisit that decision.


Proposed Northern
Water Service Clusters
Legend
Indian Reserve
Water Service Cluster
Municipality
North - South Boundary
Name
Lead Municipality
in Water Service Cluster
Name
Local Services Board
Moosonee
Armstrong
Hallebourg
Jogues
Kapuskasing
Timmins
Dryden
Kenora
Marathon
Foleyet
Temiskaming Shores
Thunder Bay
Fort Frances
Rossport
Gogama
Thorne
North Bay
Lake Superior
Greater Sudbury
Sault Ste. Marie
Willisville
South
Algonquin
(See note)
Georgian
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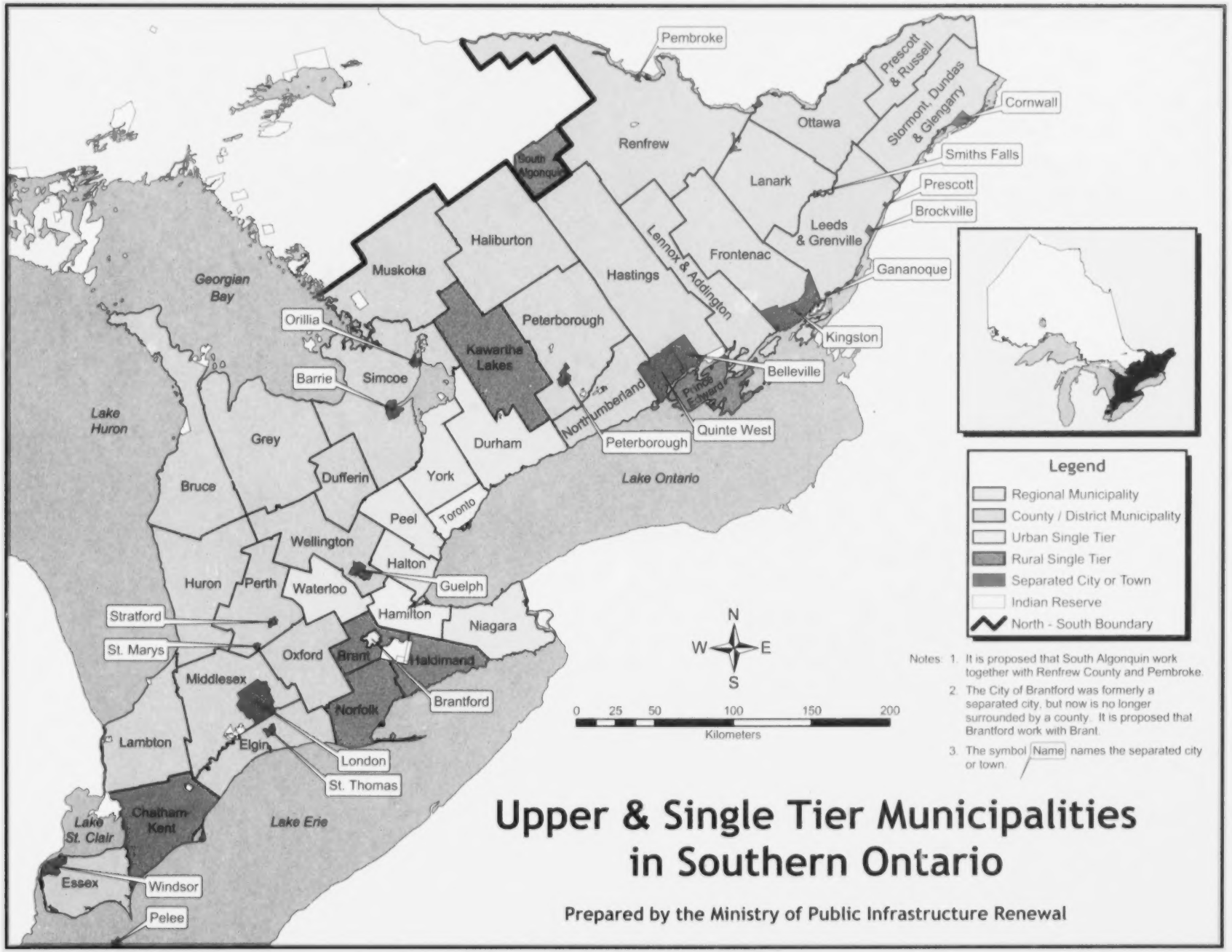
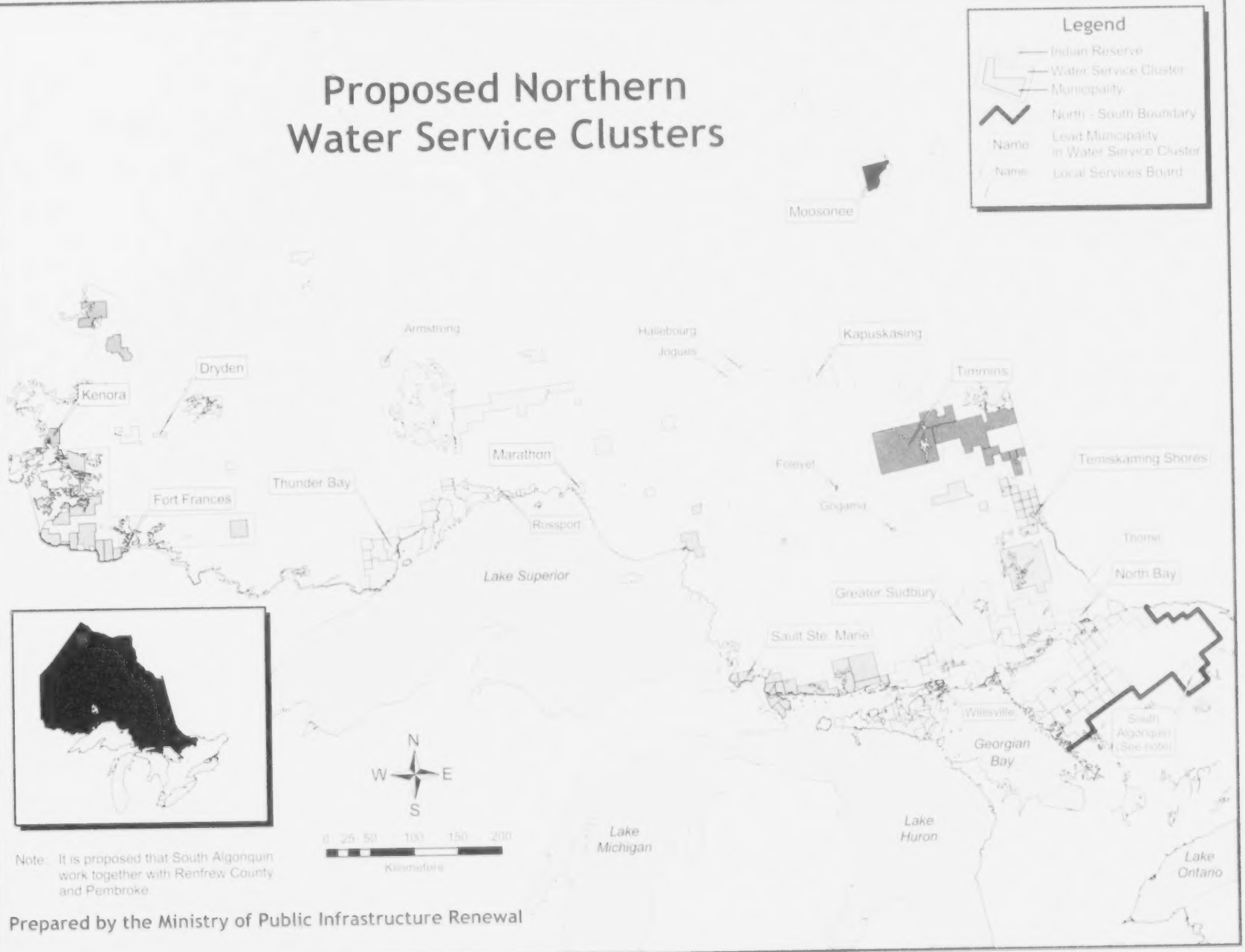
Note: It is proposed that South Algonquin work together with Renfrew County and Pembroke.
Prepared by the Ministry of Public Infrastructure Renewal



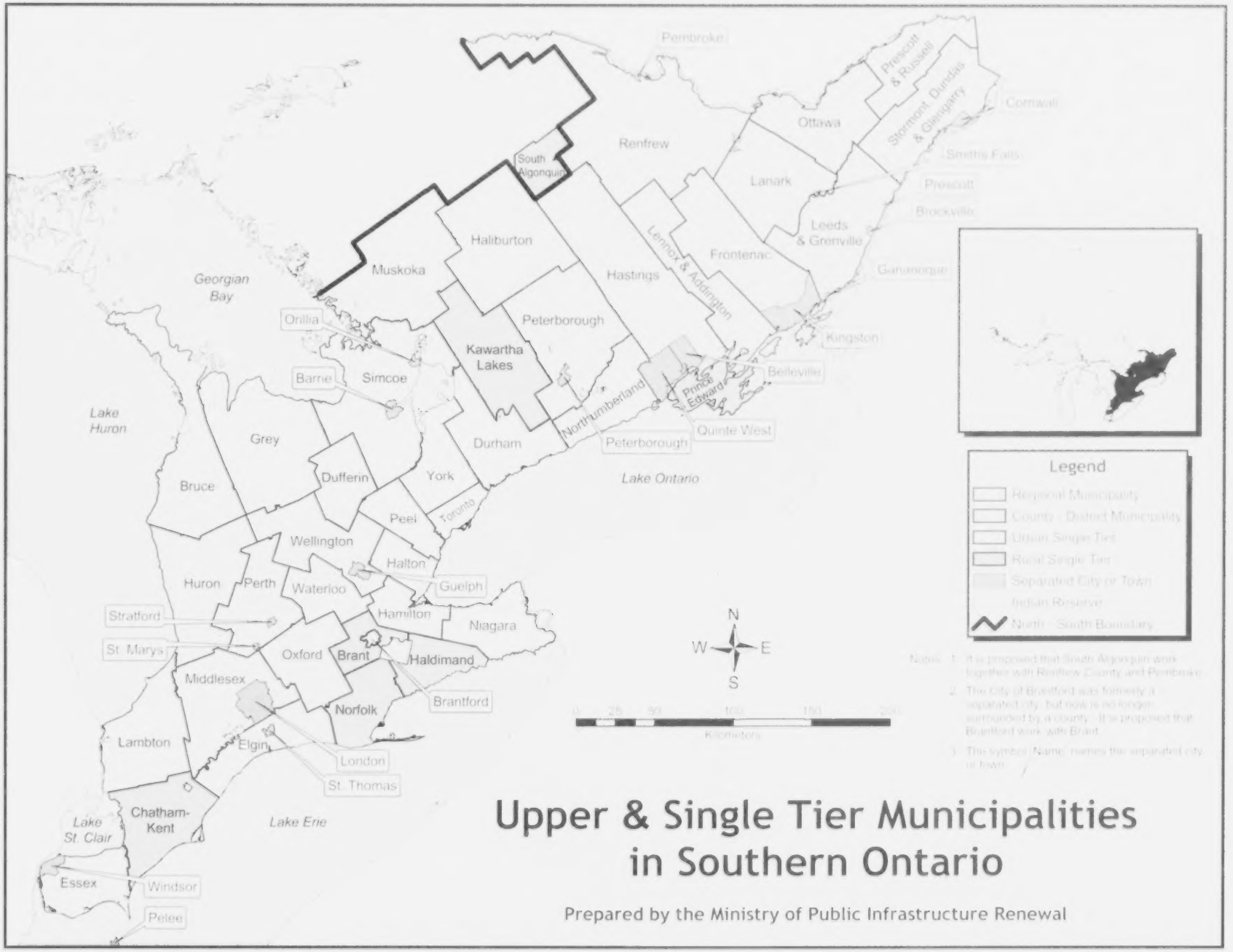
Upper & Single Tier Municipalities in Southern Ontario

Prepared by the Ministry of Public Infrastructure Renewal

Proposed Northern Water Service Clusters



Prepared by the Ministry of Public Infrastructure Renewal



Upper & Single Tier Municipalities in Southern Ontario

Prepared by the Ministry of Public Infrastructure Renewal

5 GOVERNANCE

Governance, which determines how authority is exercised and operations are managed, is critical to the success or failure of an organization. Organizations benefit from leaders who can weather short-term squalls in pursuit of a long-term plan. Where public resources are concerned, governance must be both prudent and accountable. Transparency, which allows citizens to understand and intervene, is essential.

Beyond those generalities, the people who govern water services must have a firm grasp of the technical and business aspects of an increasingly complex enterprise. The responsibilities for public health and environmental quality demand no less.

As well, governance must effectively manage costs and risks over time. Where water systems are operated by a third party, as is common in Ontario, the separation of short-term operation and maintenance decisions from asset ownership creates challenges. There are, fortunately, a number of ways to deal with this.

THE MUNICIPAL GOVERNANCE MODEL

Most water services in Ontario are currently governed directly by a municipal council. In single-tier municipalities, responsibility lies with the municipal council and is exercised, in most places, through a municipal department. In all counties except Oxford, the lower-tier municipalities govern their own systems. In some regional municipalities, however, the regional council and lower-tier councils separately exercise responsibility for the water-related assets that they own. In southwestern Ontario, there are a number of jointly owned systems that draw water from the Great Lakes and cross county and city lines. These are governed by boards representing their municipal owners, which are either single-tier or lower-tier.

The recommendations of the previous chapter should go some way toward reducing the complexity of these arrangements by moving governance, in most places, to the county and regional municipality level. As business planning proceeds, however, municipalities must ask a further question: should water services continue to be delivered by a municipal department and overseen directly by council? Or would another arrangement be better?

The Panel observed some drawbacks to direct municipal governance. Because water infrastructure is mostly out of sight, either underground or on the margins of communities, the attention paid to its long-term needs often reflects the perseverance of staff rather than the inclination of elected officials, who have many other more visible issues to deal with.

As well, municipal councils sometimes find it hard to resist the temptation to use for other needs the funds generated by, or earmarked for, water systems. This might be done by charging overhead costs that are unreasonably high, by dipping into water reserves, or by reducing capital allocations. All of these behaviours put at risk the long-term needs of water and wastewater systems.

Shared municipal governance is characterized by its own set of issues. Some tension between the largest and smallest owners is probably inevitable no matter how carefully designed the governance arrangements. As well, communities that differ greatly from the majority because of their location, needs or outlook are likely to chafe at the arrangement, which they may have little power to influence.

Despite the concerns listed above, the Panel found a number of excellent systems in small centres and larger communities alike that were well-served by the direct governance of their municipal owners. Surprisingly, it was in the largest cities that governance of water services appeared occasionally to focus less on business-like operation and more on responding to broader social and political concerns.

THE UTILITY MODEL

A utility model allows municipalities to hold the assets of water systems in a separate corporation. In 2003, the *Municipal Act* was amended to allow municipalities to own corporations to deliver services, but owing to the need for a more thorough review of the sector, the subsequent regulation did not include water and wastewater services. A few municipalities, including Peterborough, have achieved something close to a separate utility for water services and others have expressed a wish to corporatize. One possibility would be to create a municipal corporation that would deliver a range of services. Kingston and Kitchener have created approximations of such a multi-utility, and Hamilton Utilities Corporation would like to extend its corporate structure to include water and wastewater.[18]

Looking at these examples and at the experience of other jurisdictions that allow water utilities, the Panel notes that a separate corporation offers many advantages over direct municipal governance. It creates a much more transparent arrangement with the municipal owner, because the corporation must file separate financial statements that show the funds flowing between corporation and shareholder. Governance by board members provides the opportunity to draw on the expertise of objective, qualified and professional private citizens with the right range of business, financial and technical experience. Finally, with recourse to water service revenues, a corporatized utility would be able to borrow on its own behalf to fund major projects, on market terms and conditions, without competing with other municipal needs under the constraints of the *Municipal Act*.

For a number of reasons, the idea of a separate water utility is politically charged in some municipalities. Often, it is seen as a first step towards privatization or contracting out to the private sector. Neither concern is valid as an obstacle to corporatization. Whether its water system is owned directly or by a municipal corporation, a municipality has the power in principle to sell it to the private sector.[19] As far as contracting out is concerned, a system governed by a municipality may just as easily be operated by a contractor as one governed by a corporatized utility. Further, in Ontario the largest contractor of plant operations is OCWA, which is owned by the Province.

EPCOR

Arguably Canada's most successful government-owned company, EPCOR provides energy and water services to its owner, the City of Edmonton, and increasingly to a variety of other customers. With assets of $4 billion, it is a major participant in its markets.

In the water sector, the company provides operating and other services under contract to owners of water and wastewater systems in both the public and private sectors.

In 2004, EPCOR was named the Overall Winner of the 2004 National Award in Governance from the Conference Board of Canada and Spencer Stuart. Its board is made up of outside professionals and does not include any members of the council of the municipal shareholder.

More information about EPCOR is available at www.epcor.ca

MUNICIPAL SERVICE BOARDS

In 2003, legislation was passed to give municipalities a modern alternative to the PUC. The principal difference is that board members are to be appointed by council, rather than elected directly. Many municipalities had felt that having competing publicly elected bodies in the same territory could interfere with the broad accountability of councils.

[18] Kingston's utility is discussed in more detail in a paper on regulation prepared by PIR, posted on the website of the Panel at www.waterpanel.ontario.ca. The Hamilton utility case is available through the same website.

[19] As noted in Chapter 2, however, current legislation makes this financially difficult, and public attitudes in Ontario are unlikely to accept the privatization of water systems.

A municipal service board is a step in the right direction, in that it has an independent board and partially ring-fenced finances. The board may be some combination of delegates from council and private citizens, but it is dissolved with every election. Moreover, a board holds property only in trust for the municipality and does not have effective control of the capital budget. It may use its fees and charges – themselves subject to council approval – to deliver its services, but cannot borrow. It cannot "extend, enlarge, improve or alter a municipal service," or supply any customer outside the municipality, without permission. On demand it must turn over to the municipality any surplus earned from operations, although it may accumulate, in the municipality's accounts, reserves for capital requirements.

The bottom line is that a municipal service board is an agent and delegate of the municipality, as wholly subservient to the annual budgetary cycle of its owner as a municipal department. It does not have the degree of independence that a municipal corporation would have, and does not integrate in one place the long-term capital and day-to-day operational decision making that capital-intensive businesses like water and wastewater ideally should have.

CORPORATIZATION: THE BEST CHOICE

Provincial policy has ruled out private ownership of water and wastewater assets, even though there is no necessary connection between ownership and performance.[20] Whether the assets are publicly or privately owned, it is the details of management and operations that dictate excellence with respect to public health, environmental quality, and cost containment. These matters are best handled through a business-like, corporate structure.

Of the available models, the Panel therefore believes that the corporatized utility model, where the municipality owns the corporation, offers the greatest benefits in terms of governance, transparency, financial sustainability and accountability. This is especially the case where the water system is large and could be financially viable on its own. It should be open to municipalities to organize their water and wastewater services as corporations, either non-profit under Part III of the *Ontario Corporations Act*, or for-profit, under the *Ontario Business Corporations Act*, as they wish. More than one municipality should be able to share in ownership.

- **Recommendation 5.1**
  The Province should amend O. Reg. 168/03, under the *Municipal Act*, to allow municipalities to form corporations to deliver water and wastewater services and to own or lease the relevant assets, or to deliver a range of municipal services including water and wastewater, and to make it possible for more than one municipality to share in the ownership of such corporations.

> "Two basic aspects that OWWA/OMWA considers are necessary for a successful water utility are focused governance and dedicated revenues. The rest can be built but without these two critical items, 'you're not going far.'"
>
> Ontario Water Works Association and Ontario Municipal Water Association

[20] Around the world there are good and bad water utilities in public ownership, just as there are in private ownership. Ontario, Ministry of the Attorney General, *Walkerton Inquiry Commissioned Paper 18 – Drinking Water Safety: Do Ownership and Management Matter?*, by David Cameron (Toronto, Queen's Printer for Ontario, 2002).

In its presentation to the Panel, one industry group expressed opposition to "the creation of specific municipal corporations for the purposes of administering water and wastewater systems," citing concerns about procurement practices. However, the Panel was not persuaded that limiting the freedom of responsible municipalities to conduct their business in the most efficient way they saw fit would be good public policy. We do, however, agree with the need for competitive and transparent procurement processes.

OUTSIDE DIRECTORS

Municipal corporations, which the Panel favours for delivering water services, should be governed by a board with a majority of private citizens. Even in those cases where the Water Board agrees that direct municipal council control may be maintained, or a municipal service board set up, these arrangements can and should benefit from the advice of qualified private citizens with an interest in water services. Having qualified directors will make it easier to meet the new "standard of care" requirement in SDWA.

Recommendation 5.2
At least two-thirds of the directors of the board of a water service should be drawn from private life, with any remainder consisting of appointments from municipal council.

Where municipal council governs the system, an advisory board should be created to provide public guidance and comment on plans, performance and accountability.

SHAREHOLDER'S DECLARATION

Municipalities that decide to deliver water-related services through a corporation should draft a shareholder's declaration that makes clear the relationship between the municipality and the corporation, and the aims and expectations of the municipality as the shareholder.

Recommendation 5.3
A shareholder's declaration between the municipal owner and a corporation delivering water services should set out, at a minimum:

- The powers, selection, and terms of board members;
- Reporting and accountability requirements;
- Standard of care and diligence (and indemnification when acting in good faith);
- The requirement for an annual business plan, annual and quarterly public reporting, and a public annual general meeting;
- Actions requiring shareholder ratification, such as the annual business plan, rates, or a dividend policy;
- The shareholder's residual power of direction; and
- Any other basic matters of operations and policy in which the shareholder is concerned.

In line with normal corporate governance practice, the board should have the power to appoint the corporation's chief executive officer and other members of the senior management team, create a strategic plan and oversee operating practices and policies.

FINANCIAL FLEXIBILITY

The revenues and expenses of water services, whether they are departments or corporatized utilities, must be kept scrupulously separate from those of the municipality. All transfers from one entity to the other must be transparent. Transactions of a commercial nature between them, such as overhead charges and the costs of water provided to municipal parks, golf courses and swimming pools, should be priced at commercial rates.

This "ring-fencing" of financial flows means that water services must have control over collections, and hence meter-reading and billing (although they may choose to contract out or share billing with another party on commercial terms). They must also have the power to enforce collection. With these powers in place, and with rates approved by the Ontario Water Board, the borrowing capacity of water services will be determined by lenders, not the Province.

- **Recommendation 5.4**
  Water services should have responsibility for metering, billing and collecting arrangements, and should maintain separate accounts from those of their municipality; water provided to the municipality should be priced at the same rate that other customers pay; and all other transactions between the parties, such as overhead, should be priced at market value.

- **Recommendation 5.5**
  All financial flows between water services and municipalities should be reported publicly.

OWNERSHIP AND OPERATION

In Ontario, many municipalities have contracted with OCWA to operate their plants. As well, an increasing number are tendering for plant operators in a competitive bidding process.

Contracting for plant operation is a solution favoured by many small municipalities that would be hard-pressed to provide the service in-house. As well, some larger water services, such as the joint water boards that oversee large water-treatment plants and pipelines in parts of southwestern Ontario, have also chosen this option. The reasons include the better risk-management ability of a larger operator, the cost savings that can result from competition and, possibly in the case of joint systems, an operator that is distinctly separate from any of the municipalities involved.

Broadly speaking, there are two styles of contracting used in the water sector internationally (although, in principle, they are merely points on a continuum). One is short-term contracts, typically of three to ten years' duration, for the operation and maintenance of assets. In these cases – the only kind used for water assets in Ontario – the municipality typically retains full responsibility for the capital budget, rates and billing. These contracts can be problematic in that the split responsibility for capital and operations gives no single party an incentive to minimize joint costs over the long term. Having different parties own and operate water assets can lead to a tug-of-war over the division of risks and rewards: the owner wants the operator to preserve assets' long-term value, even if this is costly; the contractor, whose view extends to the length of the contract, wants to limit its major investments. Attention focuses on arguments about whether some particular expenditure is capital or mere maintenance: in other words, on the cash positions of the individual players rather than the lowest cost to the consumer over the life cycle of the assets.

The other style involves a long-term lease or concession, under which a competitively selected contractor or consortium takes full responsibility for the whole business for a period of 20 or 30 years or more. The concessionaire has a profit incentive to minimize total costs over the (financial) life cycle of capital assets, and in well-run operations can produce meaningful savings and high quality performance. In New Brunswick, Moncton's water system is one satisfied participant in such an arrangement.

The difficulties in these long-term contracts usually centre on the freedom (or not) of the concessionaire to set prices without reference to elected governments, and the potential for "capital-light" behaviour in the last years of a contract. While contracts try to pin this down, it is impossible to spell out every possible contingency and – especially in the final years of the contract – there is always a concern that the operator will be tempted to cut corners on maintenance that may well benefit a future operator. It is hard, often, for the owner of the assets to accept that because reputation outlives contracts, there is an incentive for an operator to live up to contractual requirements.

Contracting arrangements can, and typically do, make provision for any existing collective agreements with water service staff in place at the start of the contract. It is important to clarify during the contracting process how the agreement with the contract operator will reflect existing labour arrangements.

To be cost-effective over the long term, contracting out the operation of water services requires water services to develop strong contract negotiation and contract management skills, as well as to seek bidders of good repute and long-term financial stability. The Province can help them achieve this, and at the same time avoid the costs of repeatedly reinventing this particular wheel.

Recommendation 5.6

The Province should commission and publish basic contract templates for water and wastewater operations ranging from short-term operating contracts to long-term lease and concession arrangements.

6 REGULATION

Two types of regulation govern the water industry:

- **Economic regulation** is concerned with the price that consumers pay for their water services and such related matters as service areas or consumer complaints.
- **Quality regulation** ensures that drinking water is safe and that the impact of water services, especially wastewater treatment, on the environment is minimized.

The mandate of the Panel included advising on how to keep water rates reasonable and affordable. This chapter looks first at the question of economic regulation and then addresses the impact of quality regulation on affordability.

Because the current regulatory regime mixes both economic and public health and safety elements (for example, through the need for full-cost recovery plans under SWSSA that are based on asset management plans and quality standards required by SDWA), it is hard to fully separate the two types of regulatory regime. To some extent, this reflects the nature of the sector: inadequate investment can quickly have an impact on public health and safety. The Panel believes, however, that the recommendations of this chapter would provide an effective approach to both types of regulation.

ECONOMIC REGULATION

The Panel considered whether the water sector in Ontario needs an economic regulator and, if so, the shape it should take.

Economic regulation exists because some products do not lend themselves easily to market competition but are instead natural monopolies. In such cases, there are high costs to get the product into the market but low costs to add more customers; one enterprise can therefore supply the entire market at a lower price than can two or more. Water services have many of the characteristics of natural monopolies.

The problem with monopolies is that they can set prices to suit themselves rather than their customers. Excess profits disappear into the pockets of shareholders or are consumed by organizational slack. Governments have tried to solve this problem in one of two ways: either price regulation or government ownership of the monopoly.

Since virtually all Ontario water systems are and will continue to be government-owned, there is a question as to why they would need to be regulated at all. Discussions with officials of the Ontario Energy Board (OEB), which regulates the energy sector, indicate that they see their role, at least in dealing with private-sector companies, as finding a balance between the desires of customers (who want low prices) and energy suppliers (who favour high revenues).

In the water sector, however, a consistent problem in Ontario has been that municipal councils, which represent both the owners and customers of water systems, are reluctant to set rates high enough. In this situation, a regulator with the powers or mindset of, for example, the OEB would not enforce increases.[21]

This may explain why economic regulation is less common for government-owned than for private-sector water services. In the case of Australia, there is a regulatory framework that covers water pricing, but it focuses on both full-cost recovery – that is, ensuring rates are high enough – as well as maximum rates.[22] Such concerns led to SWSSA, whose regulations will require a plan to recover full costs, based on asset management needs.

[21] OEB officials concede facing similar situations in the electricity sector, with no ability to require municipal corporations to charge higher rates to pay for needed investments.

[22] PIR has prepared a paper on economic regulation, including the Australian and U.K. cases, "Economic Regulation," which was posted March 10, 2005, on the Panel's website at www.waterpanel.ontario.ca

The Panel agrees with this approach, but feels that it does not go far enough: full-cost recovery plans will not create needed change unless they also take into account the benefits of forming larger units. This is why a business planning process at a higher level has been recommended. It will need to be backed up with the creation of a different kind of regulator.

The Panel believes that Ontario's water sector would be well served by an impartial economic regulator that has the expertise and authority to bring about the results that this report recommends: water services that are large enough to be sustainable, business plans that support optimal capital investment, and the recovery of all costs through rates. To do this effectively, the regulator must be able to ensure that the plans of water services are sound, must monitor their performance to make sure they are on track, and should ensure the public release of results.

This model grows in part from a shift in thinking about how monopoly providers should be evaluated. In the past, the public accepted the risk that the management of government-owned monopolies was probably honest, but, without the pressure of competition, was unlikely to innovate or drive better performance.[23] Similarly, traditional models used to regulate private-sector monopolies relied on methods that could not replicate the pressures of competition.

New ways of trying to bring about efficiency have emerged. In the public sector, these include value-for-money audits; greater use of benchmarking, continuous improvement goals and value engineering exercises; and the growth of public performance measures that tell how well organizations have performed against their plans and in relation to their peers. Regulators of monopolies have moved from the traditional approach of ensuring a return on capital to setting targets for rates that grow more slowly than inflation, requiring the service provider to become more efficient.

While none of these mechanisms can provide exactly the same spur to improvement as open-market competition, they have shown their value in many applications.[24] What is critical – and where a regulator can play a key role – is requiring the disclosure of useful and consistent information that allows people to assess performance.

There are precedents for a mixture of performance monitoring and economic regulation in the water sector. The U.K. Office of Water Services (OFWAT) concentrates on results and performance measurement instead of detailed prescription to improve efficiency. Although OFWAT oversees private-sector companies, and sets maximum rates, its results-based approach is in line with initiatives to improve the performance of public services.

The framework in Australia, as well as covering rates and full-cost recovery of government-owned water services, as discussed above, also includes performance monitoring.

An Ontario Water Board

SWSSA requires municipalities (or their water service boards or corporations) to develop full-cost recovery plans for submission to the Minister of the Environment. The Panel notes that the considerable burden on the Minister under SWSSA would, in most other jurisdictions, be placed on an arm's-length regulatory body. This may have been foreseen, as Section 23 of the Act appears to allow the Minister to delegate these powers to a different entity.

The Panel suggests that a new regulatory body – the Ontario Water Board – be created to make the many decisions called for under SWSSA. The decisions involved are of such public note that they need to be taken by a regulatory body with the power to hold public hearings and require change where needed. The new Water Board could be

[23] K. Boulding, *Economic Analysis* (New York: Harper, 1955), 659.

[24] The World Bank provides a useful discussion, with links to real-world examples, at www1.worldbank.org/publicsector/civilservice/efficiency.htm

created by amending SWSSA, by separate statute, or through a new omnibus act that could include all legislative changes required by the recommendations of this report.

The Water Board should be self-funded, through licensing fees collected from water services. It should also be accountable to both the water sector and the Province. To help ensure this, the board should publish a schedule of its fees at the start of its fiscal year. Water services should have the right to appeal to the Province if fees are considered to be unreasonable. At year-end, the Board should publish an annual report on both its financial performance, following standards set by the Public Sector Accounting Board, and on its service quality.

The Board will be dealing with the problems of water services across the province, and needs to operate in ways that reflect this. While the organization envisioned here would be small and focused, operating from a single permanent location, the Panel feels that it would be a good idea for it to hold local public hearings in areas where water issues are controversial. Further, the Board's offices need not be located in Toronto.

Above all, the Panel notes that this new body can be effective only if the number of water services in Ontario falls. No regulator could deal effectively or in a timely fashion with plans submitted by the hundreds of water services that currently exist. The result could only be increasing frustration for municipalities, longer delays in getting to the important work of fixing systems in poor repair and meeting new quality standards, and the evolution of an ever-larger and more bureaucratic regulator.

- **Recommendation 6.1**
  The Province should create a new regulatory body called the Ontario Water Board, reporting to the Legislature through the Minister of the Environment, and grant the powers of the Minister under SWSSA to the Board. The Board should analyze and rule on water service business plans and compliance with quality management certification, and may hold hearings, receive submissions and make decisions regarding, among other things, business plans, issues of service quality, abuse of dominant position, and franchise areas.

- **Recommendation 6.2**
  The Ontario Water Board should require water services to provide information annually about their compliance with its regulatory regime and their financial and service performance, and should ensure that this information is made available to the public in a way that allows meaningful comparisons with the goals set by each water service and the performance of a peer group.

- **Recommendation 6.3**
  The Water Board should normally require an update of business plans only every five years, on a staggered basis; any proposed material change to the plan before the end of the five-year period should be submitted to the Board for approval.

The Panel is mindful that ordinarily, it is preferable not to create a wholly new entity. We had indeed considered the alternative of simply creating a water panel within the OEB. For two reasons this is not appropriate. The minor one is that the OEB reports through the Minister of Energy, whereas the Minister of the Environment properly has responsibility for water matters. The major one, however, is that OEB's procedures, which developed through regulating private-sector companies, are cumbersome, lengthy and expensive, and its decisions much more prescriptive than the water sector needs. The Panel's goal is regulation with as light a hand as procedural fairness allows, and with an eye constantly on the objectives of public policy.

The case can be made that, as corporatized utilities grow in size and independence in future, there may one day be a need for classic regulatory rate-setting. In this case, the Province could consider expanding the Water Board's mandate.

COMPOSITION OF THE WATER BOARD

The make-up of this proposed board will be critical in gaining the confidence of water services and their municipal owners. The ranks of Ontario's water sector, fortunately, include a wide range of people who are experienced, dedicated and even passionate about providing Ontario with better run water services. The board members could include, for example, retired consulting engineers and heads of municipal water works, balanced with members experienced in public finance, law and municipal administration.

Support for this Board should be provided mainly by non-permanent staff members. A small core of staff will be needed, primarily for administrative duties. However, for other needs – in the areas of regulation, performance measurement, business planning, finance and law – we do not favour the creation of a large permanent bureaucracy. To the degree possible (and always with an eye to potential conflicts), the Board should engage staff on contract from the private and academic worlds, and on secondment from the public services of the Province and Ontario municipalities. In the case of municipal staff, rotating assignments would be an excellent way of bringing front-line experience to the Board, while diffusing the expertise gained through related departments.

WATER-QUALITY REGULATIONS

Regulations on the quality of drinking water and treated wastewater are of two sorts: those that set limits on what water and wastewater must not contain; and those that determine the processes, staffing, structures and physical equipment that support the desired results.

In the past, both aspects of Ontario's water quality regulation – but especially the latter – grew in a disjointed fashion. The main instrument available to the Province was the Certificate of Approval, known in the sector as the "C of A." Originally intended to provide assurance that each particular piece of equipment in a plant was fit for use, it gradually came to encompass a wide range of other requirements covering plant operation, procedures, staffing, and even, by reference in the period before guidelines became regulations, drinking water quality.

At present, three crucial pieces of legislation – OWRA, SDWA and SWSSA – govern the sector, although the regulations to make SWSSA operational are not yet in place. A fourth piece of legislation, covering source water protection, is in draft form. Together, these are intended to untangle the complexities of the C of A process and eliminate unnecessary costs. However, the Panel believes that another step – to a system that is focused on results, not on the inputs that produce results – is also needed.

REGULATION AND AFFORDABILITY

The costs of maintaining the current water-quality regime are already high, and as further regulations are enacted will become higher. As noted in Chapter 2, the capital costs alone of meeting the requirements of the regulations enacted right after Walkerton were well over $800 million. The O'Connor report then estimated that its recommendations would entail a one-time cost of $99 million to $280 million, and increased annual costs of roughly $17 to $49 million. The Panel notes that MOE has under way the implementation of several key O'Connor recommendations, including certification under the DWQMS and development of full-cost recovery plans. As yet, however, the municipal sector does not know what the impacts will be when these are fully implemented. All of this comes on top of pre-Walkerton compliance costs, themselves not inconsiderable.

The Panel heard several times that the current regulatory regime requires small communities to build or upgrade plants and operate systems to standards that are higher than local conditions warrant. Examples included frequent testing for certain contaminants that had never been found in local source water and were unlikely to occur, as well as treatment of wastewater to remove substances that were not a threat to the receiving body. These comments came not just from councillors and staff in small municipalities, but from objective professionals (whose fees actually go up as a result of the increased cost of regulation) and officials in large, sophisticated water services.

The Panel has neither the desire nor the mandate to comment on the substance of water-quality regulations. It is possible, however, to note the concerns of those with long professional involvement in the field. While many of the changes in quality regulation were long overdue, and will unquestionably improve public health and safety, the Panel believes there is some justification for concerns about the efficacy of the approach and its impact on affordability.

CHANGING APPROACHES

Regulatory models have changed dramatically in the past several years. Best practice in the regulatory world, as elsewhere, is moving away from detailed "command and control" over inputs and processes to a focus on desired results. The shift recognizes that over-prescription can lead to frustration, stress and perverse outcomes. It also reflects an understanding that in an increasingly technology-rich world, there are many ways to reach a desired outcome – so many, indeed, that by too careful prescription, money-saving and better alternatives might be excluded. By allowing for better monitoring of outcomes, technology has also reduced the time and costs involved in ensuring that results are what they should be. It is worth noting that the Province has adopted a results-based approach for many of its own initiatives, including Modern Controllership and results-based fiscal planning and management.

In a results-based framework, system managers focus their resources on the risks to their systems that are most likely to stand in the way of desired results, instead of spending equal resources to reduce all risks. In a province as geographically diverse as Ontario, this is a particularly important issue for water systems. What may be a concern in one system may be a negligible or even non-existent problem elsewhere.

Taking an example from a related area, the Technical Experts Committee on source water protection was asked by the Province specifically to develop approaches to source protection that would take into account threats to water sources across the province. The Committee noted in its report in the fall of 2004 that it "rejected the notion that threats in [a] provincial database could be 'ranked' in a generic way that could be meaningfully applied across the whole province. …local assessment of a threat would be necessary to determine the risk posed by it…".

Similarly, the Advisory Council on Drinking Water Quality and Testing Standards, in its March 2005 report, had as a key recommendation case-by-case risk evaluations to establish testing and treatment requirements for small, private water systems. The O'Connor report also endorsed policies and planning that focus on managing the risks most likely to interfere with the desired results.[25]

When properly designed, a results-based regulatory system imposes a lighter regulatory burden and supports more efficient use of resources, better understanding and management of local risks, and greater openness to innovation. At the same time, the monitoring and enforcement function must become far more sophisticated, because there is a greater need for judgment and flexibility.

The Panel believes that the water sector in Ontario, as it moves to greater scale, would also benefit from a shift to a results-based regulatory system. The DWQMS mandated under SDWA is a proper measure in this regard and, like the business plans recommended in Chapter 4, will increase the capacity

[25] O'Connor, *Walkerton Inquiry* Part 2, 67.

of drinking water services to ensure the right results. Leaving wastewater under an obsolescent regime makes little sense, especially when economies of scope argue for making both the responsibility of a single organization. The Panel believes that the modest step of extending to wastewater collection and treatment the quality management system now nearing completion makes sense. The DWQMS was set in train by the recommendations of Justice O'Connor, whose mandate did not include wastewater; by recommending its extension, the Panel – which was asked to study the economics of drinking water and wastewater together – is taking an obvious and needed step.

Recommendation 6.4
The Province should amend the *Safe Drinking Water Act* to include a certification and licensing procedure for wastewater operations on the model of the Drinking Water Quality Management Standard.

CERTIFICATE OF COMPLIANCE

As discussed earlier in this section, with the new legislative framework for licensing and certification of water systems, there will no longer be the need for Certificates of Approval.

MOE has explained the proposed changes in this way: "Owners and operators of municipal drinking-water systems must …obtain an approval and a permit to take water… In the future, approvals will be replaced with municipal drinking-water system licences and drinking-water works permits. In order to obtain a licence, an owner will be required to have an operational plan approved by the ministry, an accredited operating authority, financial plans, a permit to take water and a drinking water works permit."

The new regime will include, however, a certificate of compliance. Section 43 of SDWA (which has not yet been proclaimed) states that "If a condition of a drinking-water works permit so provides, no owner of a municipal drinking-water system shall put into service any works, equipment, mechanism or thing specified in the permit until the owner or the owner's designate has given the Director a certificate of compliance in such form as the Director requires." It would appear that the certificate of compliance, although not mandatory, may be available at the discretion of MOE as an instrument similar to the Certificate of Approval.

The Panel believes that in the new framework of permits and certification, and with the business planning process and the creation of larger water services that it will introduce, there is no longer a place for either type of certificate. The signature of a professional engineer on asset management plans, the scrutiny of an auditor over full-cost recovery plans, and review by the Water Board of business plans can be taken as *prima facie* evidence of compliance with the law.

Recommendation 6.5
Once a water or wastewater system operator is licensed under SDWA, and operating under a business plan approved by the Water Board, it should no longer be required to obtain a Certificate of Approval for any system addition or change approved by a professional engineer. Section 43 of SDWA and other references to a certificate of compliance for municipal water and wastewater systems should be repealed.

INSPECTION AND ENFORCEMENT

Among the increased regulatory costs since Walkerton, municipalities include high on the list what they perceive as a more aggressive approach to inspection and enforcement on the part of MOE. This has had impacts through increased fines, which operators often feel are unnecessary or out of line with the seriousness of the offence, and through lower morale and higher anxiety among water-system staff – a far from ideal situation in a tight market for qualified workers.

MOE says that it has begun to move to a risk-based approach to inspection and is training its staff in this area. Any efforts that MOE is making to improve the inspection function and align it with the new regulatory regime, which the Panel feels should focus on results instead of inputs, are very welcome. Nonetheless, a central question remains:

is the Ministry, which also has responsibility for developing the policy framework, the best home for inspection and enforcement?

There are good reasons to consider other possibilities. A key consideration is the need for inspection to be insulated from the provincial budget process. In a regulatory body funded by sector participants, those being regulated tend to pay closer attention to the quality of the regulation, since they are bearing the costs, and the regulator has greater flexibility to respond to the sector's needs.

For example, a regulatory model along these lines is the Technical Standards and Safety Authority (TSSA), which was created in 1996 with responsibility for a number of existing industrial safety statutes. The Electrical Safety Authority, formed under the same model, carries out similar work in the electrical sector. There are other similar arm's-length entities that could be considered.

The Panel believes regulation should be applied using a results-based approach and take into account local risks and that the inspection body should bill water services for its services.

No matter who is responsible for inspection and enforcement, inspectors can gain the respect of the sector only by demonstrating a high level of knowledge and skill. At present, there is no requirement that a water quality inspector hold the same certification as an operator, although some inspectors are former operators and for that reason are certified. Inspectors receive 12 weeks of training that MOE believes should provide knowledge and expertise equivalent to that of certified operators. It is clear to the Panel, however, that certification as an operator is a lengthy process involving on-the-job experience as well as classroom training and examinations. While recommendations about training are outside our mandate, we would note that it is in the best interests of any regulator to ensure that its staff are seen as credible by the sector, and in the water sector this may involve strengthening inspectors' training and qualifications. As well, all inspectors should be trained in those aspects of law and of risk measurement and mitigation that are relevant to water systems.

STRENGTHENING THE ROLE OF MOE

SDWA, when fully in force, together with the changes recommended by this report, would bring about a major shift in the mandate of MOE with respect to water. SDWA would modify the old Certificate of Approval process, in favour of a more modern framework. The Panel's recommendations would create an Ontario Water Board to deal with economic and performance regulation.

These changes offer MOE the opportunity to build on its critical roles of making policy and regulations, and strengthen its ability to help municipal water services. The Panel believes that budget cuts in the 1990s, and then, after Walkerton, a major change in emphasis towards enforcement have made it difficult for MOE to fulfill its broad mandate as guardian of Ontario's waters in an effective way. It has simply been asked to do too much – including much that another organization might be better positioned to do.

The Panel believes that a sharpened MOE focus on creating a sound regulatory framework and strong environmental policies, carrying out certification under the DWQMS, and overseeing the development of a similar new standard for wastewater will benefit both the Ministry and the water sector as a whole. It should also take on a larger role in evaluating new technologies and ensuring that they are available on a more timely basis in Ontario, as discussed in Chapter 9. This would dovetail with a much-needed return to an earlier MOE role of offering technical assistance to water services.

There is also an important part for MOE to play in providing the water sector and researchers with badly-needed data on the quality of Ontario's waters. Governments all over Canada, under the pressures of budget reallocations, have for some time neglected to collect and publish the baseline data on which policy, operations and public oversight depend. This includes the quality of water in nature, including aquifers. MOE, together with the Ministry of Natural Resources, which measures water stocks and flows, should ensure that this information is collected from across the province on a regular basis and made publicly available as time-series data.

MOE should also keep and publish a central registry of all water users and their impacts on water quality: agricultural, industrial, municipal, private rural and communal. The performance of all licensed systems (including wells) against water quality standards should be routinely reported. Licensed water services will, of course, have primary responsibility for reporting on water quality to their consumers, but MOE should set standards, monitor performance, and publish summaries.

MOE will also have an entirely new responsibility in the scheme we propose: as trustee of water services (and in some instances, systems) declared "unsustainable" by the Water Board, as discussed in Chapter 7. Contracting for the operation of these while searching for better solutions will fit well with a stronger role for MOE in assessing new technologies, including those for treating water at the point of entry or point of use.

There is one subset of small systems that by their nature particularly call for MOE's leadership to avoid unsustainability, which under the recommendations of this report becomes a burden on the Province's budget. The Ministry has the power to require that small private or cooperative communal systems, with between six and 100 users, be assumed by the municipality in which they are found. These include rural subdivisions, trailer parks, summer cottage communities, and so on. Such an MOE order, especially when it assumes the only acceptable solution is centralized treatment, can impose intolerable burdens on hard-pressed municipalities.

We therefore suggest that a further role for MOE would be to gather all existing information on such systems, fill in the remaining blanks, rank systems on the basis of risks, and determine when they were approved and other details of their origins. The focus should then be on working with municipalities and water services to act immediately on those posing the greatest threat and to draw up a plan for the rest.

Recommendation 6.6

The Ministry of the Environment should, in consultation with municipalities and water services, create a registry of all non-municipal systems serving between six and 100 users; should identify those that pose the most urgent risks to public health and, working with municipalities and water services, act as quickly as possible to mitigate those risks in the most cost-effective way possible; and should develop a long-term plan to minimize the risks and costs associated with the remaining systems.

Finally, MOE has an ongoing responsibility which is not reflected in its organizational structure: regional planning and coordination of water resources and bulk systems like water pipelines at a multi-utility (or multi-Conservation Authority) scale. This is discussed in Chapter 4.

In summary, in our view the overall responsibility of MOE as the architect and overseer of Ontario's water resources will be strengthened by the proposed changes.

The business plans recommended in this report will need to look at both the rates resulting from full-cost recovery and how quickly these will be adopted. This is an iterative process, since the speed at which the transition occurs has an impact on total costs. Water services will need to weigh the benefits and drawbacks of "pay-as-you-go" funding and the building up of reserves against the possible use of debt financing.

Municipal grant programs in the past have created widespread problems in the water sector which will only be magnified as full-cost pricing comes into effect. To remove these distortions, the focus of grants and other supports from senior governments should shift towards other important infrastructure projects that, unlike water and wastewater systems, have no means of recovering their full costs. The one exception is the possible need for ongoing subsidies to the few systems in Ontario that will not be sustainable under full-cost recovery.

PROJECTING COSTS

Balancing the impacts of full-cost recovery planning, the timing of transition, and the means used to pay for capital costs and deferred maintenance is a complex exercise.

Staff at the Ministry of Public Infrastructure Renewal (PIR) supported the work of the Panel by marshalling the available data on Ontario's water and wastewater systems and creating models to estimate the financial consequences of various policy choices. The models are described in more detail at the PIR website www.pir.gov.on.ca.[26]

In brief, the suite of models starts with an inventory of assets – pipes, plants, collectors, wells – and their age or condition, materials, and capacity. The asset inventory data consist of sample data collected by PIR for 79 municipalities that have responsibility for either or both of water and wastewater services, MOE information on capacity of municipal water and wastewater plants, and pipe length estimates derived from electronic road maps. Based on normal life expectancies, these assets are rehabilitated or replaced and new assets added to serve changing population levels over time. It is also assumed that increasing prices will moderate demand and, hence, capital and operating costs. Deferred maintenance is eliminated over a period of 10 years in the examples used in this report.

These data and estimates provide a forecast of capital investments and other costs. Rates rise to cover costs, over a period of time which can vary: one can spread the cost over a long period at great total cost, or bear the burden of high price hikes in the short run and minimize the total cost over time.

Outputs – total and average unit costs of water and wastewater services – are provided for upper and single-tier municipalities in southern Ontario, clusters in northern Ontario, and for the province as a whole.

A second model uses the output from the first. Here, based on investment needs from the first model, total debt increases according to the forecast capital expenditure. Revenue from user fees increases so that total debt is at a prudent level at the end of the forecast period. The output is a simplified set of financial statements for water and wastewater operation based on starting information in the Ministry of Municipal Affairs and Housing's Financial Information Return (FIR) and produced by census division only.

[26] The website will also provide some of the background information used by PIR for the model. The website allows those interested to provide feedback on the methodologies used so that the models can be refined in future. The models will also be provided to the Ontario Water Board as a starting point in its work.

Table 6 provides cost outputs for sample upper-tier municipalities in the north and the south. It is assumed that full costs are recovered in rates by 2012 and the system brought to a state of no deferred maintenance by 2018. Each sample group faces distinct costs based not just on initial financial and engineering conditions, but also on the different costs of construction in rock versus till and the depth to which pipes must be buried to escape freezing, and on the normal cost multipliers faced by different parts of Ontario's highly varied geography.

As ingenious as the models are, they cannot be taken as a straightforward estimate of future costs. Input assumptions, technological choices, future costs, and financing mechanisms will all affect the outcomes, as will a host of site-specific details. Nevertheless, the numbers are calculated on a reasonable and consistent basis: the methods used to project Sudbury and Sarnia, Oxford and Ottawa, are the same. That said, it is useful to pause on the possible sources of error.

First, the information about the present condition, and in some cases even location, of Ontario's buried infrastructure is highly variable. Some municipalities have carefully assessed all their assets and inventoried them in computerized geographic information systems: Kenora is a good example. Some not only do not know how old a pipe is or what material it is made of, but may not know exactly where to look for it. And age alone is not an adequate predictor of condition, even if on average there may be statistical confidence. A cast iron water main from the nineteenth century may give service for years to come, under the right circumstances; but an uncoated pipe buried in a reactive soil, perhaps with electric currents circulating from residential grounding wires, may not outlast an un-rustproofed car. PIR has spent a great deal of effort over several years in developing this data base, but it still has holes.

Second, the costs of replacing and extending systems and each of their components are hard to estimate. Until this year the best synoptic source was the U.S. EPA numbers for the northern tier states, projected forward from 1999 and translated into Canadian dollars. PIR has updated all these cost parameters for Ontario 2004 conditions, including allowances for regionally varying costs of construction. But clearly, future prices will be affected by the exchange rate, how close the construction industry is to capacity in any given season, and trends in the costs of materials and machines.

Third, over the long time horizons of these models, technologies will change. While the model uses current best practice assumptions about replacement technology, a replacement water plant a decade or two in the future might be quite a lot cheaper than today's assumptions would project. The models cannot make allowance for this.

Finally, costs will be strongly affected by how municipalities choose to finance the necessary investments. This is driven principally by the speed of rate increases municipalities choose. Too fast and price shock may be high; too slow and total costs will escalate unreasonably.

TABLE 6: COST INDICATIONS, 2019

	Total costs ($ millions)	Average cost ($/cubic metre)
Average of four southern municipalities	118.9	1.76
Average of four northern municipalities	30.7	2.82
Provincial average	--	1.88

Source: PIR models

Note: - All figures are in constant 2004 dollars
- "Average cost" in the final column refers to the average unit cost of production for water and wastewater; the average unit cost in Ontario in 2004 was $1.39

With all these caveats, it should be clear that the numbers produced are indicative, not forecasts, and that they become less precise the farther in the future they are projected. They are, however, comparable over Ontario's diverse geography, and can be used to test alternative financial regimes and improved as new data become available.

Model information and methodologies are now available to any system planner in the province to use and refine. The intent is to continuously improve the model by inviting interested parties to extend its capabilities, and thus create a public resource of ever increasing power and subtlety. This should be seen as a principal output of the work of the Panel.

THE PRICE OF POOR REPAIR

In January 2005, a large area of downtown Toronto was without electrical power after a major water main break – coincidentally, just outside its city hall. The break happened on a Sunday, but a weekday break might have had a huge impact on the financial services industry, located in the same area. Officials explained that mains laid during the building boom of the 1950s and 1960s are wearing out more quickly than expected, with such "collateral damage" as the blackout. The city said it is spending about $12 million a year on repairing the breaks. The water service has proposed doubling its capital budget to invest $500 million a year – double the current amount – on an ongoing basis. The capital budget covers repairs, expansions and replacement elements at all eight plants, as well as the pipe systems. The increase would address the shortened lifespan of much of the pipe infrastructure.

The models allow the examination of the trade-offs between borrowing – higher interest rates but quicker completion – and pay-as-you-go, as well as between rapid and gentle price changes – lower versus higher total costs. At present, municipalities in Ontario generally prefer a "pay-as-you-go" funding model instead of borrowing for capital projects. The money for the project comes from a mix of reserve funds and, often, current rates.

Part of the aversion to borrowing appears to be a natural caution about getting too deeply in debt. Another reason may be the legislative hurdles of the past, when municipalities could borrow only by debenture. As well, legislation continues to constrain municipalities' debt service costs to 25 per cent of their own-source revenues.

This means, however, that building up the reserves for a large project can take many years. The result is that past taxpayers and water customers foot the bill for infrastructure that will be used in the future – in the case of a water plant, possibly over the next 30, 40 or even more years.

An additional problem is the creation of large pools of money that are not, despite being called "water reserves" or "capital reserves," legally tied to those uses.[7] Municipal councillors may quite legally borrow or even spend the money for another priority. But whether funded by tax revenues, water revenues, or a mix, water reserves were created with the implication that the money would be used to improve the systems delivering water services; and capital reserves, with the understanding these would fund capital projects.

Finally, reserve funds have associated with them what economists call "opportunity costs." Water system customers have to give up money that they could have put to more beneficial uses, in order to pay for benefits they may never enjoy.

[7] Like most reserves, water reserves are discretionary. A few reserves set up by municipalities are non-discretionary – for example, development charges go into a reserve that must be used only for specified types of servicing the development from which they were collected.

Borrowing offers several benefits over pay-as-you go and reserve funds. First, it allows the water service to match the flow of revenues with the costs of a project over a period that better approximates its life span. It also gives more flexibility to deal with capital needs when they arise, not years later. The funds can be (and often must be) legally associated, through a loan agreement, to the use for which they are intended.

Borrowing does incur interest charges. This expense, however, needs to be balanced against the recognition that putting off capital projects too long can involve other costs – for example, higher maintenance bills for plants and frequent breaks in water mains that should have been replaced. This neglect can trigger completely unrelated losses, as the box on page 47 highlights. The water service business plan should weigh all needs and highlight those projects where the costs of waiting to build reserves may be greater than the cost of borrowing to get the work done more quickly.

BORROWING FLEXIBILITY FOR WATER SERVICES

Ontario's municipalities already have a positive reception in the global investment market. Participants in the financial markets note that current demand for Canadian and Ontario municipal issues, both public and private, is extremely strong. This is reflected in credit ratings: for example, the rating agency Standard & Poor's Corp. recently announced that it rated only 11 municipalities worldwide as AAA, its highest rating. Five of these were located in Ontario.[28] (The long-term rating of the provincial government is currently AA.)

To ensure optimal access to capital for water projects at the most attractive borrowing rates as Ontario's new water services come into being, however, changes are needed in current policies, practices and attitudes. Water services must be free to operate in a business-like fashion.

This should not be difficult. Water services lend themselves to a business-like approach because unlike most municipal services, they produce a revenue stream. This makes water services ideal for stand-alone financing, without recourse to the municipality.

Recommendation 7.1

In addition to ordinary commercial borrowing, corporatized water services should have the power to issue revenue bonds.

The terms and conditions on which a utility can borrow depend on its ability to collect overdue accounts. Many municipalities in Ontario allow water service to be cut off for non-payment after all other means of collection – reminders, registered letters, collection agencies, and so on – have been tried. The appearance of a water-service truck often results in payment of the arrears without actual disruption of service.

In municipalities that do not allow water shut-off, the water service or utility must have other means of ensuring collection. This normally involves transferring the unpaid amount to the municipality, which then places a lien on the property for which the bill has not been paid. The drawback of a lien is that the money cannot be collected until the property is sold. As well, it involves legal costs. A utility has other options: it can require a deposit from new customers or set up a reserve against unpaid bills. The former does not protect against the arrears of other customers. Creating a reserve against collection uses some portion of the rates of all customers, not just delinquent ones, and if used must be included as an element of full-cost pricing.

Recommendation 7.2

After exhausting all other normal means of collection, water services should be able to transfer arrears to the municipality, which would then place the arrears on the property tax roll as a lien on the associated real property that is collectible as taxes. The amount of the lien should include all outstanding bills, accrued interest, and related legal and collection costs.

[28] T. Grant, "S&P Rates Canadian Municipalities Tops," *Globe and Mail*, 18 March 2005: B11.

Some municipalities, recognizing the extra costs of delay, have already begun – and in a few admirable cases completed – the transition to full-cost recovery. These communities have recognized that the longer the phase-in of higher rates, the longer there will continue to be a gap between revenues and needs. The consequence will be some combination of increased costs, risk, and environmental deterioration.

Once water services know their capital and other needs, they should estimate the impact on rates over various time spans, including in this calculation the costs of each year's delay. They should also weigh the possibility of financing some of the immediate needs with debt.

Perth, a town of 6,000 in Eastern Ontario, carried out exactly these calculations and decided to take the commendable step of moving to full-cost recovery without delay: this more than doubled annual water and sewer rates to an average of more than $700 for each household from one year to the next. In making the decision to move immediately, the town considered – and decided to avoid – the extra costs of taking a phased-in approach. Perth's system is now financially sustainable for the indefinite future. Similarly, Sudbury has increased its water rates to what it estimates to be the level needed for full-cost recovery.

Other communities may not be in a position to move quite as quickly, depending on their starting point and the magnitude of their needs.

The Panel recommends five years from the date on which plans are to be submitted to the Water Board as a reasonable maximum period for the transition to full-cost pricing – that is, no later than June 30, 2012. Municipalities should note, however, that phase-in can begin sooner, even before the plan is approved, and that the longer the phase-in period, the greater the total cost to customers.

One matter that has given pause to officials in Perth and other communities that have begun to act is the possibility that, having moved to an independently sustainable system, they might then see the Province reallocate grant monies that would otherwise have come to them. Nothing would more discredit the public servants who urged going ahead without waiting, or the elected officials who took their advice. This is one example of the sort of moral hazard that is inherent in discretionary grant systems and should be avoided by senior governments.

Recommendation 7.3

Water service business plans should be based on a transition to full-cost recovery of not more than five years from initial submission of the business case to the Water Board.

The present accounting policies in the municipal sector reinforce an artificially short time horizon: assets are treated like an expense in the year in which they are bought, and are not recorded on the municipality's balance sheet. With full accrual accounting, which the provincial and federal governments have already adopted, the costs of long-lived assets are recorded over their expected life span.

Because comparisons are one of the best ways to ensure that water customers are getting value for their money, water services need to adopt uniform approaches and definitions in their chart of accounts and costing approaches. "Repairs and maintenance," for example, must mean the same thing in Renfrew as it does in Red Lake.[29]

A greater challenge will be the starting book value of water infrastructure as Ontario municipalities adopt full accrual accounting, which they are expected to do in the near future. The Public Sector Accounting Board, Ontario municipalities and the provincial government are already working on this initiative.

[29] A good start was made in *Uniform Accounting Systems for Public Water Authorities*, Ontario Municipal Water Association, 1996, but an extension to accrual accounting is still required.

This work will take place in parallel with the creation of water service business plans. Accounting information, particularly book values of assets and related liabilities, should feed into the business plan. This will help to establish the starting balance sheet for the water service proposed by each business plan.

The Province can play a role in this effort, as it has already with regard to accounting standards for other parts of the broader public sector, by supporting research and education in the sector.

Recommendation 7.4
The Ontario Water Board should provide guidance to the water sector to ensure consistent application of full-cost recovery regulations and appropriate accounting standards.

There is evidence from the Panel's discussions across the province that almost all water systems in Ontario are either self-sustaining now (that is, their users can pay the system's full costs) or have the ability to become self-sustaining, given the recommendations of this report.

> "OWWA/OMWA strongly believe that subsidies or grants are counter-productive. In most cases they reward those who neglect their infrastructure and punish those who are proactive and operate efficiently and effectively."
>
> Ontario Water Works Association and Ontario Municipal Water Association

Despite all this, there is a strong feeling in the municipal sector that senior government subsidies are needed, and that the current supports – grants from the Canada-Ontario Municipal Rural Infrastructure Fund (COMRIF) and pooled-debt financing through the Ontario Strategic Infrastructure Financing Authority (OSIFA) – are not adequate.

The sad reality, as discussed elsewhere in this report, is that overly-generous grants actually caused many of the problems in Ontario's water sector today. These are still with us, in the form of plants that were built or enlarged unnecessarily and municipalities struggling to operate plants that are too big for their customer base. The impact on attitudes has been equally damaging: numerous municipalities appear to be delaying important work that needs to be done to move to full-cost recovery because of an expectation that senior government grants will solve their problems. Municipalities such as Perth and Sudbury that have, admirably, acted without benefit of grants to maintain their systems properly are understandably concerned that others who were less forward-thinking will be rewarded with catch-up money.

The foot-dragging response, unfortunately, is not entirely irrational, given the history of grant programs in Ontario. When the flow of funding through grants is unpredictable – which is usually the case – communities fail to invest when they should and over-invest once the money appears. But for Ontario to enjoy a sustainable water sector, capital projects must be driven by capital needs only, not by the availability of grants or subsidies.

The leading professional organization in the field, the American Water Works Association, of which OWWA is a chapter, has long called for an end to subsidies and for users to pay the full costs of their services.[93] The Panel agrees. Subsidies seriously distort investment and make it difficult to set proper full-cost recovery rates. With heavy subsidies, consumers (and even service owners) cannot possibly understand the real costs of consumption.

[93] American Water Works Association, *Financing, Accounting and Rates*. Policy statement adopted by the Board of Directors 1965, revised 1982, reaffirmed 1987, revised 1992, 1998 and 2005.

Arguably, the current level of support provided by OSIFA and COMRIF is so low – the latter, for example, will provide $900 million for all local infrastructure projects over five years – that it is unlikely to cause serious distortions in the water sector, especially as it is spread across all infrastructure projects. As well, there is no guarantee of future grant programs for water-related assets. It is nonetheless worthwhile to design and manage subsidies in ways that will support rather than erode the long-term sustainability of systems, and create consensus rather than division at the municipal level. Grants for most water and wastewater infrastructure should be wound down over the essentially same period of time in which full-cost recovery is phased in.

- **Recommendation 7.5**
  COMRIF and any future grant programs for water or wastewater projects in a sustainable system should be phased out by the start of the 2012 municipal fiscal year. In the meantime, grants should be conditional on the project being in compliance with all relevant legislation and the recommendations of this report, including the recommendations on business planning.

- **Recommendation 7.6**
  The focus of any water component of provincial and federal infrastructure programs should be unsustainable systems only; funds should not be limited to capital purposes, and should be routinely available once eligibility criteria are met.

OSIFA replaces an earlier program that passed through, as loans to municipalities, the proceeds of the issue of tax-free debt and thus offered borrowers substantial interest savings over market rates. The new, non-subsidized program is described as a pooled mechanism that allows municipalities to borrow at OSIFA's borrowing costs plus a spread to cover "program delivery costs."

While OSIFA reports strong interest in its program, the need for this approach for the water sector will naturally decline. Business planning will create larger water services that in most places will be able to borrow on their own. As noted, there is already strong interest on the part of the private sector in making loans to the Ontario municipal sector. Water services' financial strength will be improved through the transition to full-cost pricing. The highest-cost systems will be transferred to provincial trusteeship, as outlined in the following section. In this new world, involvement of OSIFA in the water sector will no longer be needed.

- **Recommendation 7.7**
  OSIFA should focus its efforts on infrastructure needs other than water and wastewater infrastructure.

HIGH-COST SYSTEMS

There are many small municipal systems in Ontario with high costs. This report outlines a number of ways to reduce water-related costs, including gaining economies of scale and scope, using lower-cost new technologies, or replacing treatment at source with point-of-use or point-of-entry treatment.

As well, forming larger water services can help customers of high-cost systems by cross-subsidizing rates within the service area. Chapter 8 discusses this issue in more depth, and suggests how a water service (and its owners) might balance its goals as a utility with the social need for cross-subsidization. Technological change and consolidation together will help to provide more affordable rates for the customers of high-cost systems.

Even after all of these options have been acted on (or their impact calculated), there may remain some water services with costs so high across their customer base that they cannot reasonably be recovered through rates. The Panel believes that if users will have to pay, at full-cost recovery, more than 2.5 times the provincial average unit cost of water and wastewater measured on a full-cost recovery basis, the service may well be unsustainable.

Recommendation 7.8

Where average water and wastewater unit costs in a water service will be more than 2.5 times the provincial average unit cost of production under full-cost recovery, after all possible cost savings, cross-subsidizations and consolidations have been considered, and on the petition of the water service owner, the Water Board should have the power to declare the water service unsustainable and place the relevant assets and liabilities under provincial trusteeship.

Provincial trusteeship would be somewhat like the role of a trustee in bankruptcy. The Province would take full control of the assets without owning them. As well, it would assume the obligations to maintain the water services and retire debt. It would cap rates paid by water service customers at 2.5 times the provincial average unit cost for full-cost recovery, as determined each year in advance by the Water Board, and collect payment.

The Province might determine that the water service could continue to run under provincial trusteeship with a provincial subsidy to cover the difference between the 2.5 times cap and the local rate. If, however, the costs of the subsidy were likely to be extremely high, the Province might consider less costly alternatives. These would include, for example, removing high-cost systems in the service area and either providing wells and septic systems where feasible, or providing individual water tanks, pressure pumps and sewage holding tanks, with the costs of water delivery and/or sewage removal to be borne by the residents. These actions, directed to the highest-cost systems within the water service, might well bring average service-wide costs down to a sustainable level.

Where such action could not make the water service sustainable, customers would continue to pay, if unmetered, a flat rate of 2.5 times the provincial average, or if metered 2.5 times the average cost of a cubic metre for drinking water and a parallel charge for wastewater. (The average provincial unit cost includes the capital costs of growth that are recovered from new users upfront and not through water rates, for example through the price of a house in a new subdivision.)

Once a water service has been deemed unsustainable, the Province should contract with a competent operator, through a bidding process where this is possible, to operate the assets. The Province should pay the operator all costs of running the water service assets above the capped amount collected from the customers. In the meantime, it should continue to search for lower-cost alternatives.

If and when unit costs under full-cost recovery fall below 2.5 times the provincial average, the trusteeship should end and the assets and any outstanding debt should be returned to the water service.

Recommendation 7.9

The Province should operate and maintain, under contract, unsustainable water services, absorbing all costs above the 2.5 times average threshold, until it has found a way of reducing costs below that threshold; whereupon it may petition the Ontario Water Board for an unwinding of the trusteeship.

The discussion of cross-subsidization in Chapter 8 notes that in the parts of the province where water systems are remote from one another, communities do not have strong economic or political links, and the general customer base has limited ability to cross-subsidize, it may be impossible to lower the rates in the highest-cost systems through cross-subsidization. In these cases, the average rate across the service area may fall below the threshold for unsustainability, but individual systems in the service could still have costs greater than 2.5 times the provincial average.

The Water Board, in assessing the rate structure in business plans, will need to consider this issue and the particular circumstances of each water service. In northern and remote areas, the Province may have to assume trusteeship of individual high-cost systems within a service area, where leaving these in the water service would cause undue hardship to some or all customers of that service. In those cases, the rights and obligations of the Province and those of system customers would be identical to the framework above, except that assets and customers of the high-cost systems only, not the entire service, would be affected by the trusteeship.

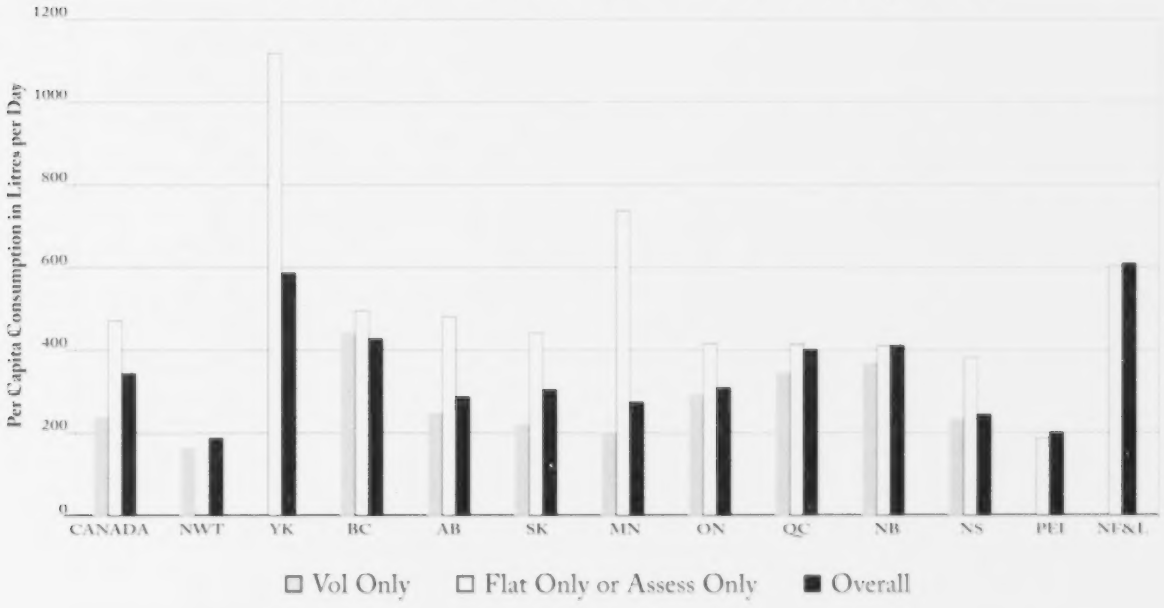
According to PIR estimates, in 2003 Ontario municipalities took in as water-related revenues only 64 per cent of the full costs of providing water and wastewater services. This proportion has risen steadily over the past several years. Still, at any level below 100 per cent, utilities are starved for the funds they need to maintain their systems properly. One benchmarking exercise with 20 utilities across Canada showed that "the average rate of reinvestment was 0.40% of the total utility replacement value."[31] This unpaid bill shows up as rust-out, less reliable service, more leaks, increasing risk to public health and convenience, environmental damage and demands for subsidies.

The other fundamental problem with low rates is that people and businesses use more water than they need, so treatment plants for both water and wastewater have to be built larger than they would be otherwise. This is compounded by two further factors that increase the risk of overbuilding, and there is evidence of both of these in Ontario.

First, there has been a tendency to push for plants that will accommodate a high level of growth. However, when growth predictions prove overly optimistic, useless and expensive over-capacity lasts for decades. The regional growth strategies to be developed under the proposed *Places to Grow Act* (Bill 136) should lead to more realistic projections of population and economic growth, and thus provide a better basis for deciding on future capacity needs.

The second issue is grants. In Ontario, the Province and at times the federal government have provided a wide range of grant programs, some targeted specifically to infrastructure and others more general. The Direct Grants program, which ran

RESIDENTIAL WATER CONSUMPTION BY PRICING METHOD BY PROVINCE, 1999



Source: Environment Canada's Municipal Water Pricing 1991-1999 report

[31] B. Hrasko, D. Main and P. Lekich, "Sustainability Through Increased Water Rates," (Hamilton, ON: Earth Tech (Canada) Inc., [2001?]).

from 1974 to 1992, provided up to 85 per cent of capital costs for water systems. The Panel has encountered some systems in northern Ontario which, with additional top-ups specifically for the North, were close to 100 per cent provincially funded. Again, grant programs may make sense in some places and circumstances, but too often they result in overcapacity and high lifecycle costs.

The results of these factors are evident in Ontario today. According to a 1996 estimate, 44 per cent of capacity in place at the time was excess to current needs.[32] Even if a generous 20 per cent were allowed for growth, more than $25 billion (in 2005 dollars) was spent before it was required, or to meet no real needs whatsoever. Given that methods for relating population projections to infrastructure investment needs have been well-known for decades, this number indicates a serious misallocation of public money.

Oversized plants lead to a vicious cycle: they incur proportionately higher upkeep and operating costs than do plants that are sized correctly. As long as pricing is too low, however, it is hard to collect enough revenues to pay for upkeep and operation.

> "OWWA/OMWA strongly support full cost pricing and uniform accounting....
>
> Water rates have been too low for too long."
>
> Ontario Water Works Association and Ontario Municipal Water Association

The solution is straightforward – raise rates to cover costs. Indeed, SWSSA will require exactly this, and most observers believe that this will go a long way toward solving the problems in the sector.

First, reducing demand with conservation measures, including higher rates, can allow a water service to delay major investments in plant expansion for several years, if not permanently. Higher prices also provide the revenues needed to start catching up on deferred maintenance.

Second, if water services get prices right, then any new plants that are built should be sized right to meet demand that is economically efficient. This would save land, money, and building time today. In years to come, it would also conserve water and provide the cash to ensure that plants are properly cared for.

Peak demand dictates the size and hence capital costs of systems. Lowering peak demand even on a few days a year can save substantial amounts of money. Rates are the most effective way of managing demand for water, because consumers respond to signals about the price of water, just as they do to the prices of other commodities.[33] While public education campaigns and regulations have their place in reducing water use, and can bolster the impact of rates, they are seldom effective on their own.[34]

The exact impact of rates on consumption is hard to estimate, because it depends on many local factors. Generally, though, a 10 per cent increase in price should cause demand for indoor residential water use to fall by 2 to 4 per cent.[35] Other activities are more responsive: the demand for water for outdoor residential use in summer, which is mainly for

[32] Ontario, Ministry of the Attorney General, *The Walkerton Inquiry Commissioned Paper 16 – Financing Water Infrastructure*, by Strategic Alternatives, Michael Fortin, Enid Slack Consulting, Inc., and Mike Loudon (Toronto: Queen's Printer for Ontario, 2002), 39.

[33] Economists measure consumer response to prices through a ratio called the "price elasticity of demand." This indicates the percentage change in consumption that follows from a given percentage rise in price.

[34] CH2M Gore & Storrie Limited, *Provision of Municipal Infrastructure Through Demand Management: Guidebook and Case Studies* (Ottawa: Canada Mortgage and Housing Corporation, March 1998); O. M. Brandes with K. Ferguson, *Flushing the Future? Examining Urban Water Use in Canada* (Victoria, B.C.: University of Victoria, 2003). Available: polisproject.org/pubs2/publicationsMain.html.

[35] D. M. Tate, "Water Demand Management in Canada: A State-of-the-Art Review," *Social Science Series 23* (1990); J. A. Beecher et al, *Revenue Effects of Water Conservation and Conservation Pricing: Issues and Practices* (Columbus, OH: National Regulatory Research Institute, 1994).

landscaping, falls by 10 per cent[36] or more[37] with the same price increase. This is important, because water demand generally peaks on hot summer days. Differential pricing in summer can be a good way of reducing those peaks.

As well, different classes of users respond in different ways,[38] with industrial users more sensitive to water pricing than residential users. All consumers are more responsive to water prices over the long run, if price increases look to be permanent, because it is worth investing in equipment and appliances that use less water.[39]

The benefits of conservation programs and price signals are largely lost unless customers are metered. But metering does not benefit just water services. Customers benefit too, through the assurance that they are paying only for the amount of water they use. Metering also reminds them of the costs of waste.

When meters are installed, consumption drops: Environment Canada's Municipal Water Use and Pricing Survey shows, for example, that residential per capita water use is consistently lower for metered municipalities across all size ranges. A study using 1996 data found that in southern Ontario, residential water use in metered municipalities was 27 per cent lower than in those that were unmetered; in northern Ontario, the difference was 37 per cent.[40] **Figure 3** (pg. 53) shows that, throughout Canada, water consumption is lower where there is metering instead of flat rates.

With metering, water services get much more information about where water is lost between its plants and its customers, which allows much better use of repair and maintenance resources and improves accountability. Municipalities have also found that the process of installing meters provides an excellent opportunity to carry out public education among residents, and in some cases to discover and correct inappropriate water-use practices, such as sending run-off from roofs into a sanitary sewer – or worse, cross-connecting roof run-off to domestic service.[41] For all of these reasons, metering is accepted as smart practice in the water supply business.[42]

Kenora's experience

Kenora, in northwestern Ontario, has moved to full metering from flat rates. The city now uses about 8,000 m^3 of water a day – about one-third the volume before metering started. Repairs to pumping stations and an aggressive leak-detection program also helped to reduce volume.

One of the most important benefits has been the ability to develop a more strategic asset-management plan. Meter data help city officials to pinpoint where losses from leakage and equipment problems are concentrated, and focus their resources on fixing those problems first. This is critical for Kenora, which is located on hilly, hard-rock terrain and has numerous pumping stations.

Officials say the change "has been a tremendous educational experience" and residents now carry out better maintenance to avoid wasting water.

[36] Strategic Alternatives et al., *Financing Water Infrastructure*, 33.

[37] S. Renzetti, *The Economics of Water Demands* (Boston: Kluwer Academic Publishers, 2002), 22, 33.

[38] Given the importance of the subject, it has been surprisingly poorly studied. The best research summary is reported in P.W. Mayer et al., *Residential End Uses of Water* (Denver: American Water Works Association, 1999).

[39] Renzetti, *The Economics of Water Demands*, 29.

[40] K. Sharratt, "Do Water Meters Reduce Wastage?" *Environmental Science & Engineering Magazine* (March 2001).

[41] O'Connor, *Walkerton Inquiry Part 2*, 236-237.

[42] J.W. MacLaren, "Fundamental Issues in the Development and Management of Small Water Supply Systems," paper presented at the Third National Conference on Drinking Water, St. John's, NL., 13 June 1988; O'Connor, *Walkerton Inquiry* Part 2, 316-317.

Despite the benefits, some large communities in Ontario do not have universal metering. (One city in central Ontario has spent tens of millions of dollars – certainly, far more than the cost of installing meters – trying to solve chronic problems with its water and wastewater system that may well be symptomatic of over-consumption.)

In communities with serious overcapacity, metering may have an unintended impact on the water system. When consumption drops sharply, it can be hard to run a water plant cost-effectively. Moreover, because water sits in the distribution system longer and the chlorine in it dissipates, in-stream rechlorination may have to be added.

Despite these concerns, however, the experience in communities that have decided to meter has been overwhelmingly positive.

The only systems in which metering may not be viable are systems that are considered unsustainable. Approaches to dealing with unsustainability are discussed in Chapter 7.

Sarnia's experience

In the late 1980s, lawn-watering because of unusually dry summer weather, pushed water usage over the rated capacity of Sarnia's water treatment plant. Instead of investing in a plant expansion, the city decided to install meters. Once meters started to signal the price of water use, residents reduced their watering. Despite growth and amalgamation in the ensuing 15 years, the plant has not had to be expanded.

Recommendation 8.1
Metering should be mandatory in all sustainable water systems.

For some years, there has been interest in the idea of joint or even universal metering that would allow data about the usage of some or all of the billed services connected to the home to be sent electronically to a central facility. Ontario has recently announced that "smart meters" for electricity will be installed across the province by 2010, with large power users metered by 2007. Even though readings for water do not need to be sent as frequently as is foreseen for electricity, water services might use the smart meter network to send consumption information electronically and save meter-reading costs. This possibility bears watching and might be the subject of an early demonstration project.[41]

Many Ontarians live in multi-unit buildings or trailer parks with but one meter. A study sponsored by the U.S. Environmental Protection Agency found that, if sub-meters are installed, consumption will decline by roughly 15 per cent. As new technologies that allow for more efficient sub-metering become more readily available, Ontario municipalities should ensure that property owners who wish to sub-meter are able to do so.

For low-income tenants, however, meters or sub-meters will present a problem if water is being wasted by fixtures that are the responsibility of the landlord. This might call for changes to building codes and other mechanisms to ensure landlord accountability.

One approach to help address the impact of the coming higher water rates on low-income households would be a program to retrofit housing with more water-efficient fixtures. This is a good idea in general and, as sub-metering grows in Ontario, would protect tenants from paying for water wasted by inefficient fixtures. Water services and municipalities should consider promoting or funding programs like this to help keep water more affordable for low-income households, while encouraging conservation and ensuring the fairness of charges.

[41] J. Spears, "Smart Meters Running Against Time," *Toronto Star*, 11 December 2004: A10.

Work is currently under way by the Province on developing regulations to govern full-cost recovery under SWSSA. These regulations will cover both drinking water and wastewater treatment. While this is important work, there is already a substantial body of research and advice in this area. Some municipalities, recognizing this existing expertise and feeling the need to act quickly, have already begun to move to what they believe full-cost recovery will require. They are wise to do so, because this will reduce the total costs and start to eliminate deferred maintenance sooner rather than later. Any differences arising from the provincial work currently going on are likely to be marginal and not difficult to incorporate.

The Panel therefore suggests strongly that full-cost recovery plans and business planning get under way as quickly as possible, and offers the following comments and guidance in advance of the regulations.

In developing rates, a water service must look at the cash flows associated with its operations and capital activities and determine how to collect those outflows through water rates over a reasonable period of time. The focus, in developing rates, is therefore on cash inflows and outflows over a period of several years. This means that some "costs" shown in financial reporting that are not identical to the actual cash flows during the year, such as amortization of tangible capital assets, may not be included in costs for the purpose of developing rates.

The following elements must be included in full costs:

Capital costs

- New pipes, plants, equipment and other infrastructure, together with associated engineering and related services
- Replacement or rehabilitation of worn assets
- The cost of capital, including interest on debt, the opportunity costs of reserves, and, for water services created under the *Ontario Business Corporations Act*, a return on invested capital

Operating and maintenance costs

- Personnel: Payroll, including deferred benefits, clothing allowances, and so on; training, including conventions, publications and membership fees, travel, including car allowances, mileage
- Chemicals and other supplies
- Metering, billing and collecting, including provision for bad debts
- Provision of public information
- Repairs and maintenance, including shop charges and materials
- Fuel and power
- Administration, including accommodation, office equipment and supplies, professional services, miscellaneous fees and expenses
- Taxes and payments in lieu of taxes, where applicable
- Inspection and enforcement

Environmental costs

- Source protection
- (In principle, but in practice not quantifiable, degradation of environmental quality)

Emergency services

Most costs, especially operating costs like chemicals and wages, are straightforward to calculate. Others present challenges.

Capital and deferred maintenance
Estimating the costs relating to physical capital is important, but this is the area in which water services typically have the least information. Almost three-fourths of water and wastewater infrastructure is buried underground, in the form of water mains and sewer lines. Few municipalities have full information as to the age, condition and even location of these assets. The asset management plans required by SDWA and SWSSA will help determine what it will cost to bring systems into a state of good repair and keep them that way, as well as which assets need replacement, repair or upgrading.

The estimated backlog of deferred maintenance across Ontario is roughly $11 billion and growing, overwhelmingly related to distribution and collection systems. Spending in the first years of full-cost recovery will have to be high enough not just to prevent the backlog from growing, but to eliminate it. Approaches to covering these costs, and the impact on rates, are discussed in Chapter 7.

Financing
Water pricing should take into account how major projects are to be funded. Whether a water service finances its activities through reserves, debt, or some combination, it should try to estimate the costs of an appropriate capital structure. When looking at replacing large assets, even if an existing system was largely paid for with senior-government grants, the only prudent assumption in setting prices is that the municipality will one day have to pay for replacements from its own revenues. This has implications for financing. Municipalities need to recognize that while borrowing involves costs, there are also opportunity costs involved in building reserves. Approaches to financing, and also long-term sustainability, are discussed in Chapter 7. Another important principle for rate-setting is that in general, the cost of capacity added to serve new groups of customers should be borne by those customers.

Return on capital
Elsewhere, this report recommends that municipalities should be able to deliver water and wastewater services through municipal corporations. Particularly for large systems with relatively low costs, the water utility (like an electricity distribution company) may aim to pay a dividend to its municipal shareholder – perhaps not in the first few years, if there is a deferred maintenance bill to be attended to, but ultimately. Even if its activities within its municipality are at cost-recovery only, it may deliver services to neighbouring municipalities on the basis of earning a return. In either case, a return on invested capital is appropriate, as long as the water utility meets all the needs of its capital asset management plan – which it must do, by law – its intentions and results are reported transparently, and its rates and returns are not excessive by industry standards.

Administrative overhead
Water services in Ontario are generally part of a municipal public works department and are charged internally for overhead costs provided by the municipality. Delivering water services through a corporatized utility would bring greater transparency to these arrangements. At a minimum, water services should use benchmarking and, if necessary, consider competitive outsourcing of the services included in overhead.

Taxes and payments in lieu of taxes
Municipal corporations, if set up as for-profit, may be subject to taxes or payments in lieu of taxes (as are other municipally owned utilities). Taxes on income would require the water service to be making a profit and are therefore not likely to be an immediate issue. As of February 1, 2004, municipalities, their internal departments and, potentially, non-profit corporations they owned became fully exempt from the GST. For-profit municipal corporations would appear to remain subject to the tax.

Inspection and enforcement

In Chapter 6, the Panel makes suggestions about the regulatory regime and its enforcement. If accepted, this advice would result in systems paying directly for inspection, but should reduce the regulatory burden in general. The Province, through MOE, would continue to bear the cost of developing regulations.

Environmental costs

A recent report to the Minister of the Environment on source water protection legislation outlined some of the possible costs of better protection for water sources. The report recommended that municipal councils "should consider whether at least some portion of the municipal share of funding for source water protection should be recovered from municipal water and sewer rates."[44] The Panel goes further than this, and recommends that regulations under SWSSA require that at least part of source protection costs be included in local water rates. A more general issue is systems' "environmental opportunity costs." Recent work in this area suggests that these may be both large and difficult to estimate accurately.[45] If more precise measurement techniques are developed, these costs could become an element of full-cost pricing in future.

Emergencies

Chapter 10 discusses the question of shared responsibility for emergency preparedness. Water budgets should allow not just for the need to fund local emergencies and unexpected events, but also the costs of this collective responsibility.

Firefighting

The list above does not assume that the indirect costs to the water system that make it suitable for firefighting – oversizing mains, building storage capacity, adding hydrants and keeping pressure at a high enough level – should automatically be included in water rates. There is a good argument that firefighting is a service to property, not a water or wastewater service, and therefore the general tax base should pay the excess costs of water systems that result from firefighting needs. However, only a few municipalities take this approach. Where a municipality does collect funds from the general tax base for firefighting, this should be made clear in business plans and financial reporting, both to allow the Water Board to assess whether the charges are reasonable and to permit comparisons with water services that bear the entire cost.

[44] Ontario, Ministry of the Environment, Implementation Committee, *Watershed Based Source Protection: Implementation Committee Report* (Toronto: Queen's Printer for Ontario, 2004) c. 79-80. (Other funding sources would be the permits to take water that major consumers, including municipal water systems, must hold, and a system of pollution charges that is currently under development.)

[45] S. Renzetti and D. Dupont, "Full Cost Accounting for Water Supply and Sewage Treatment: Concepts and Case Application," *Canadian Water Resources Journal 28* (2003); S. Renzetti and J. Kushner, "Full Cost Accounting for Water Supply and Sewage Treatment: Concepts and Case Application," *Canadian Water Resources Journal 29* (2004) 13-23. Renzetti and Kushner estimate that unaccounted costs in the Niagara Region water system include $900,000 to $11 million for environmental degradation.

Rates set by a water service must be designed to collect revenues that match its full costs. The structure of the rates needs to be both fair and economically sensible.

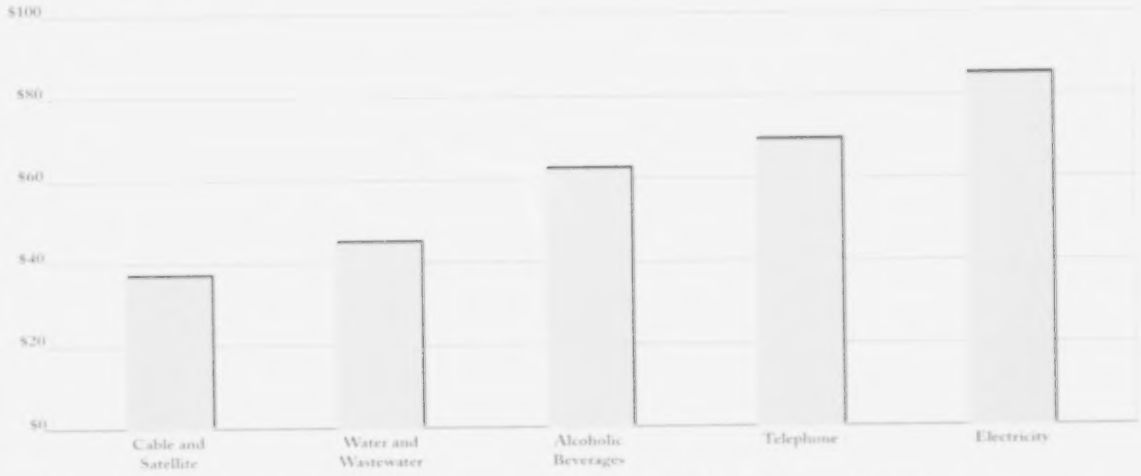
Fortunately, people in Ontario are beginning to understand that the clean, safe water delivered to their homes and workplaces, and the need to maintain a healthy natural environment, are worth more than has been recognized in the past. Water services currently take a relatively small share of household spending, as **Figure 4** shows. The Panel heard repeatedly that municipal councils – whether taking tentative first steps or moving to full-cost pricing in a single bound – have drawn few, if any, complaints from local water customers.

As rates go up, however, there are questions of affordability for some consumers – and questions of sustainability for some systems. While affordability and sustainability are linked, they are different problems:

Affordability is a concern for the individual budgets of consumers. For households, which are the group most likely to face hardship as a result of high water rates, affordability is related to the distribution of incomes. No matter how cheap water is, it will still be expensive for some people.

Sustainability refers to system costs. There will be a few systems that, even after consolidation and all other possible efficiencies have been captured, cannot produce the necessary services at reasonable prices. In Chapter 7 we define unsustainable systems as those whose costs exceed 2.5 times the provincial average and recommend a method for dealing with these cases.

COMPARATIVE AVERAGE MONTHLY HOUSEHOLD EXPENDITURES (2002)



Source: Statistics Canada's Survey of Household Spending and Ministry of Public Infrastructure Renewal.

The two types of problems are related, in that the smallest systems have the highest costs and also tend to be in communities with low household incomes. In contrast, a system in a big city is unlikely to have a sustainability problem even if a substantial number of their customers are low income.

Affordability for households is an issue of income and should be addressed through income support policy. What is important is to ensure adequate income, and then let people arrange their spending as they see fit. Subsidizing specific goods is ineffective and paternalistic. In the case of water services, it would work directly against conservation while at the same time adding administrative costs that could have been used directly for income support. There are, however, other ways of mitigating the impact of water rates on low-income consumers and promoting conservation. Metering and ensuring that low-income households have water-efficient fixtures are examples.

A special case in which affordability and sustainability may be addressed through rates is when a number of systems in a larger water service have costs much higher than the rest of the service. This is discussed below under "Local cross-subsidization."

It should be noted that high water rates also have an impact on water-intensive businesses. This has not been central to the Panel's consideration because businesses are better able to deal with water rate increases, if necessary, by investing in more water-efficient processes or even developing their own water source. We also observed that the businesses in the most water-intensive industries, such as food processing, tend to be located in areas where water is not particularly costly.

RATE STRUCTURES

The most common practice in water billing is to combine a flat fee with a volumetric charge, reflecting the combination of fixed and variable costs that go into treating and delivering water and collecting and treating waste. Other systems simply charge by volume used.

An argument beloved by economists says the price should be set at the long-run marginal cost of supply – that is, at the cost of the last unit produced over a time period long enough that all inputs, including fixed capital, may be considered as variable. The practical problems of doing this are, however, overwhelming. Theoretical purity would require that a different calculation be made for every customer, since each is at a different point on the distribution system and so has different costs. The costs of such a system would outweigh the benefits. A recent paper explains the theory and, perhaps a trifle reluctantly, shows how difficult it would be in practice.[46]

Some municipalities have put in place a rate structure – the declining block rate – that drops the price of water as more is consumed. The higher consumption that this encourages may eventually push the system to exceed its capacity. In the long run, therefore, declining block rates are likely to increase costs by requiring systems to add capacity before they might otherwise have had to.

Recommendation 8.2

The water rate may include a constant portion, representing the fixed costs of providing the service, and must include a non-decreasing volumetric charge.

Some municipalities use water rates as an industrial location inducement; some also exempt new employers from development charges. The result is that local ratepayers must pick up the difference. This is a hard argument to make in a period when costs for all are rising.[47] Besides, as one government presentation to the Panel demonstrates, there are almost no industries (beer, soft drinks, and certain metal-working industries aside) for which the cost of water is a meaningful part of production costs.[48] As one very large firm told the Panel, their concern is simply that

[46] Ibid.

[47] As another example, Toronto's municipal golf courses are not billed at all for the water they use, a considerable subsidy to golfers.

[48] Ontario, Ministry of Economic Development and Trade, "Full Cost Pricing for Water and Waste Water Services – Potential Impacts on Industrial Competitiveness," available on the website of the Panel, at www.waterpanel.ontario.ca

they not be discriminated against, and that their water costs be similar to those of their competitors.

This also argues against, in general, offering different rates to different classes of user. The use to which water is put is not linked to the costs of producing it, so all classes of user on a system should pay the same volumetric charge.

Recommendation 8.3
Volumetric water rates should not discriminate among industrial, commercial, institutional, residential, recreational or municipal classes of customer of a water system.

If water systems become physically connected, the new rate structure may increase prices for customers from one system. Recommendation 8.3 is not meant to act as a barrier to the physical connection of water systems.

In the water business, demand fluctuates seasonally more than hourly or daily, and unlike electricity, finished water can be stored in reservoirs, standpipes or even the distribution system itself for a period of time before use. Using the price mechanism to flatten short-period demand is thus not cost-efficient. But there are major fluctuations on a seasonal basis, generally driven by outdoor lawn-watering, car-washing and swimming pool filling, and here the use of pricing can have important effects. Windsor, for example, introduced a summer surcharge of about 100 per cent in 1989 and brought the ratio of peak to average use from 1.63 to 1.5, with the result that the city was able to put off the requirement for an expensive new water treatment plant for some years, pay for it when it was needed, and avoid summer use restrictions.[49] Savings were huge.

Recommendation 8.4
Water service business plans should include an assessment of the costs and benefits of using seasonally varying prices to flatten demand.

In general, the customers of a water service should not pay the capital costs of extending or improving service to benefit another group of customers that can afford to pay themselves. This means, for example, that existing customers should not subsidize the costs of water and wastewater in a new subdivision. The new homeowners should pay: if costs are going to be too high, the decision should be to disallow the development, not subsidize it.

Many communities in Ontario use development charges, which the Province allows as a local option, to ensure new development pays its share of infrastructure costs. This practice is not universal, however. Where it is not used, existing water customers and even taxpayers bear the costs of attracting new development.

In future, business plans for water services must show how such costs will be collected without burdening the general customer base; otherwise, as full-cost recovery and the ring-fencing of water services finances are implemented, the impact on water customers of underwriting new development could become onerous.

Recommendation 8.5
A development charge should be used to pay for any increase in capacity that benefits a specific consumer or new group of consumers; where development charges are not available to the water service, business plans must show how expansion will be paid for without burdening existing customers.

Recommendation 8.6
In the case of a major industrial development with benefits to the provincial economy as a whole, the Province may elect to pay some or all of the incremental water and wastewater capital costs.

[49] Ontario Centre for Municipal Best Practices, "Water Conservation and Deferral of Capital Upgrades," *Best Practice Summary Report*, 11 February 2004

There are some cases where an existing group of residents within a larger water service face extremely high costs to meet regulatory standards. These cases comprise a wide range of situations: as examples, a development consisting of a handful of high-end houses on two-acre lots, a hamlet with a few dozen customers on an aging and inadequate system, or a trailer park where many residents are on fixed or uncertain incomes.

In some cases, it may be warranted for the general customer base of a water service to provide a subsidy if the social consequences and costs of not doing so would be greater than the subsidy. Factors that need to be considered include the likelihood of environmental damage if residents moved off the system, or the need to find alternative housing if a trailer park shut down. In such cases, the cost to the municipality's residents of a local cross-subsidy through water rates might be less than the costs of the alternatives, which they would feel as taxpayers.

In practice, cross-subsidization may be reflected in uniform or "postage stamp" rates across the customer base. Alternatively, it may result in rates that are different from one community to another, but with a smaller differential than would otherwise be the case. The former approach has been used in single-tier municipalities, notably Kawartha Lakes and Prince Edward County, which were created through the amalgamation of several smaller communities. An example of the latter is Oxford County. Discussion with municipal officials indicates that both approaches appear to have worked well.

This is an area where the business-like operation of a water service will need to be balanced against the broader social concerns of the municipal owner. As well, residents should be made aware of any proposed cross-subsidization before it is put into effect: at present, this normally happens when rate structures are discussed by municipal council.

With the creation of corporate water services, responsibility for projecting full costs and the rates needed to support them will fall largely to the water service. The municipality will have a role in deciding how far postage-stamp pricing should extend, and whether there are particular customers at special risk. Help with demand management, for instance, may be an issue. The Panel believes that a local public meeting after the water service's publication of its proposed annual business plan would provide a good forum for discussing these issues.

The Panel expects that cross-subsidization is most likely to happen where there are existing economic links among communities; where the number of high-cost systems and customers is small in relation to the general customer base, limiting the impact on rates; where communities are reasonably close to one another, geographically; and where there is a successful history of sharing administrative costs through a higher jurisdiction. Cross-subsidization, in short, is most likely to happen in the more densely populated parts of the province, where municipalities form an integrated economic community and where the county or regional government provides a model for how to handle cost-sharing.

Recommendation 8.7

Where the cost of a subsidy from the general customer base to an existing group of residential consumers would be less than the social costs of not providing the subsidy, and as long as the subsidy will not make rates unaffordable to general customers, the general customer base may be used to subsidize service to that group.

WASTEWATER SERVICES

The usual practice in Ontario is to set wastewater collection and treatment charges as a percentage of water supply charges. It is time to look more closely at what lurks behind this rough-and-ready rule.

Percentage surcharges for wastewater vary considerably from one jurisdiction to another at present. The reasons include the relative state of repair of sewage collection pipes and the infiltration they suffer as a result, as illustrated in **Figure 5** (pg. 64), as well as inconsistencies in the handling of stormwater and meltwater. As water services develop full-cost pricing based on asset management and operational plans, problems like this will be highlighted in a way that will make corrective measures obvious. In the case of wastewater handling, each water service

ought to have a plan for dealing with infiltration, combined sewers and short-term storage of stormwater and meltwater that is appropriate to its circumstances. Over time, wastewater surcharges should converge to similar levels in similar systems: if they do not, this will signal to customers and the Water Board that more action may be needed.

Septage is another issue for wastewater services. With new restrictions in place for the handling of septage, as discussed in Chapter 3, and others probably on the way, many sewage treatment facilities are planning upgrades to receive and treat it. Utilities should be able to charge septage haulers separately for this service, especially as septage is likely to be coming from outside the utility's service area.

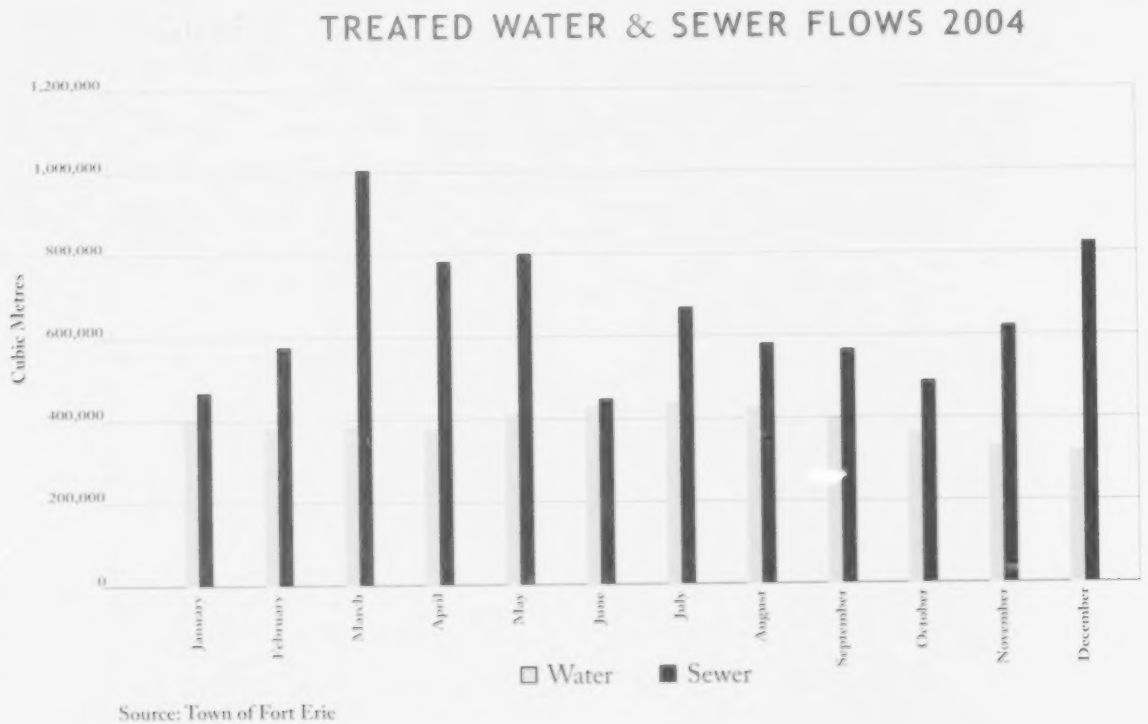
Without coordination, there are a number of risks. The first is the danger of having too many facilities, with a consequent waste of capital, or too few, with the result that haulage charges become unaffordable. Another risk is that municipalities without adequate physical capacity or the ability to deal with the high pollutant concentration in septage will nonetheless attempt to receive and treat it.

This is an important issue from the perspective of economics, accountability and environmental protection. The costs of handling septage will be borne, in many cases, by taxpayers in a municipality other than the one receiving it for treatment. Encouraging the new water services to cooperate on a regional basis is a task for a refocused MOE and its regulatory partner, the Ontario Water Board.

Recommendation 8.8

Wastewater facilities should be able to charge for septage handling and treatment, with charges set out in the rate structure developed through the business planning process.

Figure 5. This graph shows how infiltration of sewer pipes can break the linkage between volume of drinking water and volume of water arriving for treatment at a wastewater plant:



Source: Town of Fort Erie

9 INNOVATION

Innovations in technology and training can help increase productivity, lower costs and improve water quality, but if Ontario is to benefit, the current rate of change must pick up smartly.

> "One way of ensuring efficiency is to allow more freedom to professional engineers to try innovative technologies as well as engineering judgement to design systems without time-consuming and restrictive review..."
>
> R. McMichael, Lambton Area Water Supply System

Technological solutions in the water sector have proliferated in the past two decades.[50] To take two important examples, twenty years ago membrane filters fine enough to screen out pathogens and dissolved chemicals were just being invented, but were far too expensive for ordinary operations, for which chemically-assisted sand filtration is still the regulator's choice. Now, their costs in many applications are less than all alternatives, and their performance better. The use of ultraviolet (UV) light and ozone to inactivate pathogens was in its infancy, but is now widespread. UV radiation kills protozoan cysts much better than does chlorine, the standard treatment, and high dosages do not appear to be an issue, as they are with chlorine.[51] Both of these innovations are now commercially available at scales from single households up to whole cities.

Unfortunately, while technology has improved rapidly, the ability of MOE to assess and adapt it to Ontario conditions has moved in the opposite direction. Professionals in the field told the Panel that the depth of MOE's engineering and other technical expertise declined markedly, starting in the early 1990s. The situation has improved in recent years, as MOE has sought to increase the number of badly-needed professionals on its staff. The perception lingers, however, that much remains to be done to improve its capacity in water-related science and technology.

As noted in Chapter 3, the focus at MOE shifted increasingly to regulation: but without leading-edge knowledge about new ideas and techniques, even this regulatory role cannot be carried out properly. Firms with new products and water services that want to use them run up against MOE requirements that require them to bear the costs and risks entirely. The resources available to support innovation are limited, given the high costs of MOE's inspection and enforcement role.[52] As a result, Ontario municipalities have at times been discouraged from considering newer technologies that might offer both public safety benefits and cost savings.

This must not continue. Nowhere is the requirement for innovation greater than with the smallest systems. It is the smallest municipalities, the rural communal systems with a few dozen connections, the trailer parks and seasonal communities, which are having the greatest difficulty coping with the regulations that were introduced in the wake of Walkerton. This was a constant theme across the province. For these applications, point-of-use or point-of-entry devices may be vastly cheaper than "chemically-assisted filtration and disinfection" at the source.

[50] R. S. Raucher et al., *Conventional and Unconventional Approaches to Water Service* (Denver: American Water Works Association, 2004).

[51] Too much chlorine may produce disinfection byproducts which themselves may constitute a threat to public health, but UV kills pathogens without, apparently, ill side-effects. Dosage is thus less critical. However, chlorine must still be added to protect water that enters a distribution system after UV treatment.

[52] MOE assesses fines, but these are paid into the government's general accounts.

The Panel has suggested in Chapter 6 that inspection of water works and enforcement of regulations could move to a body outside MOE, under a sector-funded model. Such a change would free up resources within MOE and allow it to shift the focus of its activities towards a greater role in providing technical assistance to municipalities.

An important aspect of this refocused role for MOE should be to search out and adapt to Ontario the best of the new technologies that are springing forth everywhere. It should work with municipalities and engineering companies in field trials, and should cooperate with the federal government, leading professional organizations, and standard-setting bodies here and abroad, such as the Canadian Standards Association and the U.S. National Standards Foundation, to bring the best of the world's innovations to Ontario, and in turn to contribute Ontario experience to the global knowledge base. It should cooperate with the Ministry of Economic Development and Trade to make sure that Ontario companies with something to offer get some running room. In sum, MOE should devote resources to a sustained effort in technological innovation and assistance and reassume a leadership role in helping municipalities.

Recommendation 9.1

MOE should devote additional resources on a continuing basis to assisting in the timely adaptation of innovative technologies and techniques for use in Ontario's water and wastewater sector.

Training was not a part of the Panel's mandate, but it was the second most commonly mentioned problem raised among the 116 municipalities we consulted (the costs of the increased regulatory burden post-Walkerton being the first).

Like regulation, however, training has an impact on costs and affordability, and these were important elements of the mandate. It is indisputably true that a well-trained workforce will get the most out of today's complicated water and wastewater systems: good operators keep costs down. This is quite apart from the public health and safety aspects that also demand a high standard of staff training. The most commonly cited problem relating to training was the cost, especially where it involved travel to distant centres and the need to find back-up operators. Water services were fearful, too, of investing in training and then having operators poached.

Recommendation 9.2

The Ministry of the Environment should ensure that training is more readily available in remote locations, through distance learning, "circuit rider" trainers, accreditation of more qualified institutions or organizations, and recognition of accreditation from other provinces having certification standards similar to those of Ontario.

The Province has said that the new Walkerton Clean Water Centre will help to ensure that training is available and accessible to operators in rural and remote communities.

The Panel heard from the managers of water services that they would like to see a greater link between the training level of water and wastewater staff and their compensation. This is a worthwhile goal, but must be dealt with through collective bargaining. It is worth noting that some water and wastewater services in Ontario have been able to move in this direction through the bargaining process.

It is not just the front line which is experiencing a shortage of trained people. The Panel's own observation, reinforced by a reading of the O'Connor report, is that the people on the governing bodies of water services today are not fully cognizant of their duties and liabilities under the law – and are worried about that. As well, while the Ontario labour market generally offers a large supply of financial, human resources, procurement, and planning personnel, there appear to be some shortages of specialized staff.

Recommendation 9.3

MOE should work with the Ontario Municipal Water Association (OMWA) and the Ontario Water Works Association (OWWA) to assess the need to increase the number of people available to undertake professional and directorial roles in the Ontario water industry, and to offer training and skills upgrading as necessary.

While MOE and the professional associations OMWA and OWWA might collaborate on assessing the needs in these areas, and in arranging training sessions for directors, we also noted a shortage of skilled tradespeople that seems to affect the whole construction industry. Anecdotal information provided during consultations indicates that the labour force experienced in working on large, complex and demanding construction jobs is aging and is not being replenished – to the extent that industrial capacity across the country is being affected. A sewage treatment plant costing $100 million in Ontario is competing for the same skilled workers as an oil sands plant in Alberta, for instance. There are stories of seriously low responses to Requests for Expressions of Interest and even for construction tenders. The Panel also heard, in the smaller places, that setting the same deadline for work on all systems has led suppliers to raise prices and has reduced the availability of contractors.

Many firms have been burned in the boom-and-bust Canadian heavy construction industry in the past, and are wary about over-expansion. To some degree, the recognized need to eliminate deferred maintenance and the publication of the forecast long-term capital requirements in this report should tell the industry that it is safe to expand capacity and invest in people. There has to be a response, however, from young Canadians. This is a problem that extends well beyond the Panel's mandate, but it would seem to repay research and a modest campaign of public information.

10 ONTARIO CLEAN WATER AGENCY

The Panel's mandate called for advice on the role of the Ontario Clean Water Agency, a provincial agency reporting to the Minister of the Environment. OCWA, which was created by the Province in 1993, is Ontario's largest operator of water and wastewater systems by number of systems.

CURRENT SITUATION

In 2003, OCWA had operating responsibility for roughly 450 facilities. Because most large municipalities run their own systems, however, OCWA's share of the market in dollar terms is small – between 8 and 10 per cent. It also earns a minor share of its revenue through providing such professional services as project management on a contract basis.

OCWA is a troubled operation. Its operating revenues have declined on average roughly 2 per cent a year annually since 1994 and its operating margins have weakened considerably in recent years.[53] There appear to be a number of reasons for its problems:

- There have been several abrupt shifts in policy since its creation. One of the most significant was a decision in 1997 to move ownership of more than 200 water-related facilities from OCWA to municipalities. With the change in ownership, many municipalities have chosen to bring operations in-house or, increasingly, to use a private-sector contractor.
- While the policy environment shifted and OCWA's near-monopoly eroded, OCWA failed to get clear direction from its owner as to how to respond. This was exacerbated by leaving in place a governance framework that relied too heavily on public policy expertise instead of commercial know-how, and by saddling the agency with obligations that interfere with its ability to operate in a financially self-sustaining way.
- There has been continuous turn-over at the top of the agency since 1997, the year in which the Province announced that ownership of water and wastewater assets would be transferred to municipalities. Since then, it has had seven chief executive officers. All came from within the public sector, and few had in-depth knowledge of the business aspects of the water sector. Together, this suggests a failure on the part of the shareholder to pay sufficient attention to OCWA's governance.
- OCWA's leadership has, at times, behaved in ways that would be unusual in the business world. The most controversial example was a 10-year contract which OCWA signed in 1998 to operate facilities in South Peel, at a time when the Province was considering OCWA's privatization. As reported in the news media, the contract contained several "poison pills" that would benefit the municipality if OCWA's ownership changed during the contract. The effect was to entrench the existing ownership. Moreover, there was concern that OCWA underbid on the contract, which was $67 million below its previous contract with the municipality.[54]
- The net present value of OCWA's current contracts is likely negative. Most are fixed-price, and margins have been squeezed by increasing costs of electricity and other inputs in recent years. It has moved to correct this problem in new contracts, but is still bound by the existing ones.
- In earlier years, OCWA earned good returns from a portfolio of loans to municipalities for completed water projects. The mandate to make new loans was withdrawn in 1996. With repayment of the earlier loans and lower interest rates, this source of revenue has declined sharply.

[53] PIR has prepared a paper, "The Ontario Clean Water Agency," that provides a more detailed analysis of OCWA and its role in the current market. It is available on the Panel's website at www.waterpanel.ontario.ca, with the creation date of March 14, 2005.

[54] Ibbitson, J. "Crown Firm Won Bid, Avoided Selloff with Contractual 'Poison Pill,'" *Globe and Mail*, 6 April 2000: A6.

OCWA's operating margins were declining in the period leading up to the Walkerton Inquiry. Mr. Justice O'Connor's Recommendation 50 suggests some concern about the agency:

The role of the Ontario Clean Water Agency in offering operational services to municipalities should be maintained. The provincial government should clarify the Ontario Clean Water Agency's status and mandate. In particular, OCWA should be:

- *an arm's-length agency with an independent, qualified board responsible for choosing the chief executive; and*
- *available to provide standby emergency capabilities.*[51]

Looking at OCWA today, the Panel agrees with the concern implicit in the recommendation. It is governed by a board that consists of five deputy ministers and the heads of two provincial agencies, one of which is OCWA itself. Such a body can hardly be called "arm's length," as OCWA is described by the Ministry of the Environment.

> "In our own experience, OCWA was providing a good service, but at a totally unreasonable cost. In addition, the whole administration function is absolutely unacceptable. You cannot get answers to your questions and cannot get solutions to your billing problems... There will not be a future for OCWA unless their costs become more competitive and they become more accountable to their customers."
>
> Township of North Huron

Private operators in the water sector have complained that OCWA's status gives it unfair advantages in the market for contract services, as evidenced by the South Peel contract. OCWA does not pay income taxes, provincial sales taxes or GST, does not have to earn a profit on sales or capital employed, and as an agent of the province is indemnified against liabilities and can borrow at government rates. These are substantial advantages not enjoyed by its commercial competitors. On the other hand, OCWA is bound by the employment and financial conduct rules of the public service – rules that can stand in the way of timely and commercial behaviour.

Conversations with customers leave the strong impression that most feel OCWA has a high level of skill at the operating level, but is top-heavy and too centralized as an organization. As well, many customers express frustration at what they consider a lack of accountability at the higher levels, a problem which may well be linked to senior management turn-over. Finally, the Panel observes that a history of inadequate direction – both from its shareholder and from its board and senior managers – has created problems that are evident at the Agency today.

AVAILABLE OPTIONS

There are a number of options for the future of OCWA, but the status quo is not one of them. Under present circumstances OCWA is a self-liquidating organization. It is losing contracts, its revenues are in decline, it is losing money, and some of its most talented and mobile staff, aware of this, have been looking for alternative employment. Something must be done or OCWA will wither away.

[51] O'Connor, *Walkerton Inquiry* Part 2, 331.

The Panel considered several possible roles for OCWA. For example:

- It might be a contract operator much as it is now, but with the tools to compete effectively with private sector operators;
- It might be a contract operator that sees as its real competition not private operators, but in-house municipal organizations;
- It might concentrate on operating unsustainable systems under contract to the Province;
- It might be a provider of emergency standby capabilities;
- It might be allowed to own as well as operate assets, thus freeing municipalities from the liabilities of ownership and reaping the benefits of integrated ownership and operation.

Of course, other futures are imaginable, including combinations of the above. It could be wound down. It could be sold – either to a private-sector firm, or to a government-owned company seeking to enter or expand in the Ontario water sector.[56]

At issue is a public policy interest: that all customers of municipal water systems in Ontario be supplied with safe, affordable drinking water and wastewater services. The Panel feels that this objective is best served by keen and lively competition among water service operators. When water services are allowed to choose among several options to meet the needs of their customers, including contracting operations to one of a number of competent companies, the winners will be water consumers.

The Panel feels that for OCWA to be truly arm's length from government, as recommended by Justice O'Connor, and able to take part in a competitive market, the Province should reorganize it under the *Ontario Business Corporations Act*. This would be in line with the structure of both Hydro One and Ontario Power Generation Inc., provincially-owned companies which also deliver essential public services.

- **Recommendation 10.1**
  The Province should amend the *Capital Investment Plan Act* to delete reference to OCWA; OCWA should be incorporated under the *Ontario Business Corporations Act* and have all the ordinary powers, responsibilities and liabilities of a normal OBCA corporation, with the Province as its sole shareholder; OCWA should cease to be an agent of Ontario and its employees should cease to be members of the Ontario Public Service.

> "OCWA's role in the future as a service provider depends on how much freedom they will get in the management of their affairs. To compete in the market they should be independent and possibly privatized."
>
> R. McMichael, Lambton Area Water Supply System

Adopting this recommendation will require careful consideration of the contract and pension arrangements for existing staff, to ensure the right balance between the interests of employees and employers in a new OCWA.

[56] Any possibility of a sale brings sharply into focus the conflict of interest faced by deputy ministers who serve on crown corporation boards. From the point of view of the enterprise itself – the entity to which directors owe a fiduciary duty – the most attractive and lowest-risk future would probably be purchase by a larger, financially sound company expanding in Ontario. But the public policy issues on which deputy ministers spend the rest of their time could be substantially affected by such a sale. See H. Swain, "Governing Our Crown Corporations," *Globe and Mail*, 21 October 2004: B6.

Recommendation 10.1 gives rise to a number of further recommendations:

Recommendation 10.2
The Province should draft a new Shareholder Declaration setting out the activities, goals and governance of the corporation, which should include the freedom to enter into joint ventures and other arrangements with other sector participants, whether in the public or private sector.

Recommendation 10.3
The Province should name a board composed of experienced and competent people from the private sector who have full authority to appoint the chief executive and senior officers of OCWA.

Recommendation 10.4
The new board should draw up a strategic plan aimed at achieving OCWA's full potential in its revitalized form in the context of Ontario's reformed water sector and, if it wishes, in other markets as well.

Recommendation 10.5
On the basis of its acceptance of the strategic plan, the Province should ensure that OCWA's capital structure is appropriate to the activities it will carry out.

> "OCWA has served smaller municipalities in rural Ontario fairly well. They have a highly trained and skilled staff ... however, OCWA seems to have very high administrative costs... their headquarters in downtown Toronto must be extremely expensive to maintain."
>
> Robert M. Sweet, Warden, County of Renfrew

Such an arrangement will work only if the Province allows OCWA to act as an independent and commercially oriented company, free of government *paperasserie*. To that end, it must accept the risks, as well as the potential rewards, of the commercial world.

Recommendation 10.6
The Province should no longer guarantee the obligations of OCWA nor indemnify its actions; OCWA should pay all normal taxes and be able to make independent banking arrangements.

While the Panel does not feel it should intrude too far into the strategic plans of the as-yet unnamed new board, it suggests that the new board should consider moving OCWA's headquarters from its current location in downtown Toronto to a location that makes access to its customer base easier.

Until regulations under SWSSA are proclaimed, there is no formal requirement that municipalities set rates high enough to cover all costs, and this may add to the squeeze on OCWA's profitability. However, once full-cost recovery rules and business plans are in place, Ontario may offer OCWA and other contract operators a more attractive market. A suitably recapitalized OCWA, operating truly at arm's length from government, should be able to earn a return on capital and pay taxes, and might eventually return a dividend to its shareholder. If not, it should suffer the ordinary consequences of failure: sale or wind-up.

This anticipated future for OCWA is in line with the belief that allowing system owners who want to contract out to choose among as many competent operators as possible is the best way to meet the public policy goal of providing safe, affordable water services in Ontario. This is particularly the case in places where local conditions invite competition – which would appear to include most communities in Ontario.

Chapter 4 discusses water pipelines serving multiple communities. One such pipeline has an interesting history and a financially clouded future – both involving OCWA.

In 1996, the provincial government promised Honda a supply of water at a reasonable price should the company locate a second assembly plant in Alliston, which has since been amalgamated as the Town of New Tecumseth. But the provincial government was then the prime architect of a confused and unbusinesslike arrangement whereby a 600 mm (23.6 inch) pipeline was built south from Collingwood (although a 150 mm or 6-inch pipeline was all that was needed). The project cost $28.5 million, of which $5 million was a provincial grant and $12.3 million a loan from OCWA, plus loans from the builders and the municipalities of New Tecumseth and Collingwood.

A special purpose entity with no assets or income outside of its interest in the pipeline, the New Tecumseth Improvement Society (NTIS), was set up as the principal debtor in a scheme that could pay for itself only if substantial new customers signed on. When Bradford emerged in 2003 as a potential new customer, Collingwood objected, claiming (among other things) that this would constitute an inter-basin transfer. Although the validity of its claim was never established, the project died and Bradford turned to other sources.[57]

Without the addition of Bradford (or indeed any other major new customer for the pipeline's water) the NTIS debt cannot be serviced from current revenues. By May 2006, then, unless other revenue sources emerge, NTIS would owe OCWA the $12.3 million loan and accrued interest, which could be substantial by that point. Under the agreement, this would trigger what the agreements around NTIS call a "Decreased Return Event" – a default, in ordinary business language. While this would give OCWA new management rights, these would fall short of what would be needed to operate the pipeline in a way that would ensure recovery of the loans.

The onus for this series of management and planning errors lies with the government of the day when the pipeline was built, not with OCWA, which had no choice about its involvement. A desirable investment in support of a major industrial development was financed in full recognition that the cost would have to be borne later, by other parties. Unhappily it falls to the present provincial government and NTIS to sort out the mess. This work is complicated by the fact that many of the potential new customers for the water are located in an area where growth must be planned carefully, owing to the impact of the resulting pressure on wastewater-receiving bodies.

Recommendation 10.7

Before May 2006, unless a suitable new revenue source for the pipeline appears, the Province should arrange for the wind-up of the New Tecumseth Improvement Society and provincial assumption of its assets and such of its debt as cannot be serviced from reasonable user charges.

Recommendation 10.8

If the Province assumes the pipeline and its debt, it should then arrange for OCWA or another certified operator to operate the pipeline under a long-term lease or concession arrangement, with the contractor having the power to maximize the revenues of the pipeline so long as the effect is not to increase the price of water to Honda beyond what it would otherwise have been, nor to make water rates for other customers unacceptably high, in the view of the Water Board.

These recommendations recognize that without action, the pipeline may cause OCWA to founder, burdened as it would be with the responsibilities but not the powers of ownership.

[57] "New Tecumseth Threatens Legal Action on Water," *Bradford West Gwillimbury Times*, 22 February 2003: 2.

The business planning exercise in the counties in which the pipeline lies should take into account the "Decreased Return Event." Water services created in the area may wish to approach the Ontario Water Board about a new and more business-like governance and ownership model for the pipeline, a possibility that would depend on a greater level of cooperation than has been displayed to date.

Finally, the issue of emergency standby services, which Justice O'Connor's recommendation touches upon, needs further examination.

All of Ontario's water service providers can stretch their resources to cope with local or nearby system failures. In the case of Walkerton, for example, the first organization to offer assistance was Kitchener-Waterloo. (The Province decided instead to order OCWA into the field, with cost allocations to follow.)

The response of a larger neighbouring municipality suggests that Ontario does not need a dedicated standby team of water engineers and operators in case of the rare emergency, but instead requires enough spare capacity in the system as a whole and a way of mobilizing it when needed.

There is a long and honourable public sector tradition in Ontario and indeed across North America of helping one's neighbours in emergencies. Forest fire crews go from province to province, electrical linemen from different jurisdictions work together in ice storms and hurricanes, and Ontario water utilities often have emergency arrangements with their neighbours.

This tradition provides an alternative to a top-down solution that would rely on a single provider of emergency services. The water industry as a whole should work together to define and provide emergency capabilities. Under SDWA water services will be required to document comprehensive quality management plans as a condition of licensing. A mandatory feature of these plans is preparation for emergencies.

Recommendation 10.9

Emergency plans required under SDWA should include arrangements with nearby water services for mutual assistance in emergencies.

The Panel expects that the Ontario Municipal Water Association and the Ontario Water Works Association may be relied on in working out good management practices in this respect. The cost of emergency planning is also a component of the "full costs" discussed in Chapter 8.

A revitalized OCWA would, of course, be one of the licensed providers assisting in emergency planning and service provision through this collective activity.

In summary, the Panel feels that OCWA's reality should match the needs of an evolving sector. It should be reorganized to be an able competitor in the water and wastewater services market, with all the powers it needs to be commercially competitive, and should sink or swim thereafter on its own merits.

Ontario's future must include reliable supplies of safe, pure water and wastewater treatment that nurtures the environment, delivered by strong water services that provide measurable value to their customers.

This future is easily within our grasp. Many of the building blocks are already available, and the leaders in Ontario's municipal sector have begun moving them into place. With action on the measures outlined in this report, water services will be able to complete the building job in a reasonable time and with significant cost savings.

If the Panel's recommendations are adopted, and as water services move to full-cost recovery, PIR estimates that billions of dollars can be saved, as indicated in **Table 7**. The savings would accrue through economies of scale, letting costs define demand and eliminating the backlog of deferred maintenance over 10 years.

These estimates rely on a number of critical assumptions – an asset base of $72 billion, an average asset lifespan of 84 years, an annual failure probability of 3.5 per cent for assets whose repair or replacement has been deferred beyond planned lifespan, a premium for emergency replacement of 75 per cent, and annual growth in demand in line with that assumed in the investment needs model. As a result, the table is indicative, and not a forecast. However, it shows that the actions recommended and endorsed in this report would save Ontario water services and their customers more than $8 billion over 15 years.

Moreover, adopting the recommendations will ensure that far more systems are financially sustainable than would otherwise be the case. With the status quo, PIR estimates that the water services of more than 100 municipalities would become unsustainable over the next 15 years. Creating larger units and adopting the report's other recommendations will reduce the number of potentially unsustainable water services to just seven, according to the Ministry's estimate.

TABLE 7: GROSS SAVINGS OVER STATUS QUO

Millions of 2004 dollars

Time horizon	Total savings
Savings at 5 years	2,993
Savings at 10 years	4,843
Savings at 15 years	8,031
Savings at 30 years	18,754

A STRONG AND SUSTAINABLE SECTOR

If the blueprint for change contained in this report is adopted, Ontario's water services will attain the stature and scale that are needed to meet the demands of an increasingly complex set of utility services. Through a rigorous business planning process, they will develop and make the case for a model that will work for their customers and their unique conditions.

By working together, systems in the smallest communities will gain the depth of skill and experience to effectively manage risks and create value. New water services will be able to make better decisions about how to add capacity and find savings for their customers. They will be free to innovate and to apply best-in-class solutions, many of them developed by companies in Ontario, to the challenges of serving small populations in remote locations. By looking across jurisdictional boundaries, water services will be able to join in protecting many of our most fragile and threatened watersheds.

To do this, they will need, in the Province, a partner that recognizes that local consensus builds the best local solutions, but is also responsive to a need for change that grows more urgent every day. Through a refocusing of the Ministry of the Environment, a shift to regulation that concentrates on results instead of process, and a Water Board that is committed to the long-term financial sustainability of systems, the Province will once again move into a role of leading positive change in the water sector. Through a revitalized Ontario Clean Water Agency, it will increase the options available to water services that wish to benefit from the choice of service providers. By gathering and making public consistent easily-understood information on both water quality and the financial performance of water services, the Province will move accountability to citizens for the long-term health of systems to a higher level. It will be in a position to celebrate the successes of the sector, and provide help for those who genuinely need it.

Because of the magnitude of the potential savings and the importance of putting Ontario's water services onto the path to financial sustainability, the Panel urges the government and municipalities to act as quickly as possible on the recommendations of this report. While some will require legislative change, others – particularly the business planning process – can begin immediately. As the experience of many municipalities has shown, acting sooner saves costs. In the case of business plans, getting to work as quickly as possible will help ensure the most balanced and effective approaches to governance, accountability and financing. The result will be a stronger water sector in Ontario that will be sustainable for decades to come.

ANNEX A. Biographies of the Panel members

On leaving the Canadian federal government, where he had been deputy minister of Indian Affairs and later Industry, Dr. Swain became CEO of Hambros Canada and a director of its U.K. merchant banking parent. At present a company director and management consultant, he served as Chair of the Research Advisory Panel for the Walkerton Inquiry. Dr. Swain holds a doctorate in economic geography from the University of Minnesota and an LL.D. from the University of Victoria.

Professor Lazar brought the perspective of an economist to the panel. He is Associate Professor of Economics at York University and the Schulich School of Business. He holds a Ph.D. from Harvard University. Professor Lazar has written extensively on a wide variety of economic policy issues, including water industry investment and regulation, employment and trade.

Mr. Pine has more than 20 years of experience of both water issues and municipal government. Originally from northern Ontario, he is currently Chief Administrative Officer of the County of Hastings. He served as a member of the Implementation Committee of the Expert Source Water Protection Committee, providing advice to the government on tools and approaches to implement watershed-based source protection planning. He is also a member of the board of the Municipal Property Assessment Corporation. He has been active in many municipal organizations, including the Association of Municipalities of Ontario, the Ontario Municipal Administrators' Association and the Ontario Municipal Management Institute. He holds a Master of Public Administration degree from Queen's University.

ANNEX B. Mandate of the Panel

The Expert Panel was asked to advise on:

- The geographic and organizational structure of water and wastewater systems
- The governance of water and wastewater systems
- The amount of investment required
- How to minimize total system costs, while meeting all public health, environmental and water quality regulations
- The way in which water and wastewater rates should be established, and whether and on what basis rates should be regulated
- How to ensure that water rates are reasonable and affordable for various types of users, including the pace at which water rates should increase, while ensuring that systems are financially sustainable and appropriate infrastructure investment takes place
- Whether cross-subsidization among ratepayers is required and, if so, options for implementation
- How to address the challenges that rural and remote communities may face
- The impact of new approaches to organizational structure on infrastructure investment, quality of system management, water rates, source protection and municipalities
- How to ensure that adequate financing is available to undertake the necessary capital investments
- The role of the Ontario Clean Water Agency in the recommended approach
- Issues related to the transition to the recommended approach
- The relationship between the implementation of the regulations under the *Sustainable Water and Sewage Systems Act* and the new Long-Term Water and Wastewater Infrastructure Investment and Financing Strategy
- Other matters that bear directly on the long-term investment and financing strategy (e.g., conservation issues, encouraging innovative/cost effective approaches to service delivery).

ANNEX C. Who the Panel heard from, and support team

The Panel consulted with the following communities:

Arnprior, Town of
Arran-Elderslie, Municipality of
Assiginack, Township of
Atikokan, Township of
Bancroft, Town of
Belleville, City of
Billings, Township of
Black River-Matheson, Township of
Blue Mountains, Town of the
Bonnechere Valley, Township of
Brockton, Municipality of
Bruce, County of
Bruce Mines, Town of
Callander, Municipality of
Centre Hastings, Municipality of
Chapleau, Township of
Chatsworth, Township of
Deep River, Town of
Deseronto, Town of
Dubreuilville, Township of
Elliot Lake, City of
Espanola, Town of
Essex, Town of
Faraday, Township of
Foleyet, Local Services Board of
Fort Erie, Town of
Frontenac, County of
Goderich, Town of
Gogama, Local Services Board of
Gore Bay, Town of
Greater Madawaska, Township of
Greater Sudbury, City of
Grey, County of
Grey Highlands, Municipality of
Haldimand County
Haliburton, County of
Halton, Regional Municipality of
Hastings, County of
Hawkesbury, Town of
Hilton Beach, Village of
Hornepayne, Township of
Iroquois Falls, Town of
Johnson, Township of
Kawartha Lakes, City of
Kenora, City of
Killaloe, Hagarty and Richards, Township of
Kingston, City of
Kirkland Lake, Town of
Kitchener, City of
Lanark, County of
Lanark Highlands, Township of
Laurentian Hills, Town of
Laurentian Valley, Township of
Leeds and Grenville, United Counties of
Lennox and Addington, County of
Limerick, Township of
London, City of
Loyalist, Township of
Macdonald, Meredith and Aberdeen Additional, Township of
Markham, Town of
Mattawa, Town of
McDougall, Municipality of
McGarry, Township of
Michipicoten (Wawa), Township of
Muskoka, District Municipality of
Nairn and Hyman, Township of
Niagara, Regional Municipality of
North Algona Wilberforce, Township of
North Huron, Township of
North Shore, Township of the
Northeastern Manitoulin and The Islands, Town of
Northern Bruce Peninsula, Municipality of
Northumberland, County of
Orangeville, Town of
Ottawa, City of
Oxford, County of
Parry Sound, Town of
Peel, Regional Municipality of
Pembroke, City of
Petawawa, Town of
Peterborough, City of
Peterborough, County of
Plympton-Wyoming, Town of
Point Edward, Village of

Prescott and Russell, United Counties of
Prince Edward, County of
Quinte West, City of
Ramara, Township of
Red Lake, Municipality of
Renfrew, County of
Renfrew, Town of
Sables-Spanish Rivers, Township of
Sault Ste. Marie, City of
Simcoe, County of
Smooth Rock Falls, Town of
South Bruce, Municipality of
South Frontenac, Township of
South River, Village of
Southgate, Township of
Southwest Middlesex, Municipality of
St. Clair, Township of
Stirling-Rawdon, Township of
Stormont, Dundas and Glengarry, United Counties of
Temagami, Municipality of
Timmins, City of
Toronto, City of
Tweed, Municipality of
Tyendinaga, Township of
Waterloo, Regional Municipality of
West Grey, Municipality of
West Nipissing, Municipality of
White River, Township of
Whitewater Region, Township of
Windsor, City of
Wollaston, Township of
York, Regional Municipality of
Zorra, Township of

Listed below are the organizations and individuals who provided their views to the Panel:

Advisory Council on Standards
American Water Services Canada Corp.
Aquatech Water Management Services Inc.
ASI Group
Association of Municipalities of Ontario
Bank of Nova Scotia
Blake, Cassels & Graydon LLP
B.M. Ross & Associates
Borealis Infrastructure
The Canadian Council for Public Private Partnerships
Canadian Environmental Law Association
Canadian Institute for Environmental Law & Policy
Canadian Standards Association
Canadian Water Network
CH2M Hill Canada
Clouthier Consulting Company
Conservation Ontario
Prof. Rob de Loë (University of Guelph)
Deloitte & Touche LLP
Earth Tech (Canada) Inc.
Eastern Ontario Municipal Water Association
Energy Probe Research Foundation
Environmental Commissioner of Ontario
EPCOR Water Services Inc.
Glen Scott Shortliffe and Associates
Hamilton Utilities Corporation
Prof. Gary Harman (Cornell University)
International Organization for Standardization
Prof. Harry Kitchen (Trent University)
Kitchener Utilities
Lakefront Utility Services Inc.
Lambton Area Water Supply System
Marshall, Macklin, Monaghan
McCarthy Tetrault LLP
MS Filter Inc.
Municipal Engineers Association
Municipal Finance Officers' Association of Ontario
National Guide to Sustainable Municipal Infrastructure (InfraGuide)
Nextek GBL Inc.
Northern Waterworks Inc.
Ogilvy Renault, Barristers & Solicitors
Ontario Municipal Administrators' Association
Ontario Municipal Water Association
Ontario Public Service Employees Union
Ontario Sewer and Watermain Construction Association
Ontario Teachers' Pension Plan
Ontario Water Works Association
Peterborough Utilities Group
Phytobials LLC
Professional Engineers of Ontario
Quinte Conservation
RBC Capital Markets
Prof. Steve Renzetti (Brock University)
Public Sector Accounting Board

Rural Ontario Municipal Association
R.V. Anderson Associates Ltd.
Sault Ste. Marie PUC Services Ltd.
Shelby Environmental Services Ltd.
Standard & Poor's
TD Securities
Tor Bay Capital
Utilities Kingston
UV Pure Technologies Inc.
Veolia Water Canada
Vermicycle Corporation
Water UK
Wollestone Home & Cottage Association

The following ministries and agencies provided briefing materials and other assistance to the Panel:

Ministry of Agriculture and Food
Ministry of the Attorney General
Ministry of Economic Development and Trade
Ministry of the Environment
Ministry of Finance
Ministry of Municipal Affairs and Housing
Ministry of Northern Development and Mines
Ontario Clean Water Agency
Ontario Energy Board
Ontario Strategic Infrastructure Financing Authority

The Panel was provided with information, analysis and support by public servants from PIR under the first-class leadership of Bill Hughes, Director of the Infrastructure Strategies Branch. The hard-working team included:

Lindsay Allison (research and financial modelling)
Becca Franssen (administrative support)
Paul Gray (data development)
Martha Greenberg (research and production support)
Eliza James (research and policy analysis)
Jonathan Lebi (research and policy analysis)
Stephen Monrad (investment needs modelling)
Kelly Shields (project oversight)
Karen Slawner (project management)
Ed Slugocki (computer cartography)
Carley Taylor (investment needs modelling)

The Panel was greatly aided by its resident writer, Catharine Lyons-King, who also joined in most of the field research and travel.

The production, printing and distribution of the report was overseen by Cindy Greeniaus, Director of Communications at PIR, and coordinated by Jeff Kerr and Sheldon Ens of her staff.

Finally, the Panel wishes to single out a few individuals whose counsel was particularly helpful in aiding our understanding of the realities of water and wastewater in Ontario:

James W. MacLaren, long the dean of Ontario's water engineers, for advice throughout the process

Robert A. Goodings, a former head of Gore & Storrie, president of AWWA and currently President of the Ontario Society of Professional Engineers

Ken Mains, **George Powell** and **Peter Nicol** of CH2M Hill Canada Limited for frank discussion (Mains especially) and colourful metaphors

Margaret Kelch, former head of Technical Standards and Safety Authority

David King of the Ministry of Municipal Affairs and Housing, for assistance in the field

Dr. Stuart L. Smith, for the benefit of his experience in several careers

Prof. Steven Renzetti, for sustained and exceptional scholarship

Prof. Harry Kitchen, for advice on melding theory and practice

Rod Holme, of both OMWA and OWWA, ever generous with his time and contacts

Pat Vanini of AMO, for advice and help in understanding the municipal point of view

Bert Clark, first on the staff of the Minister of PIR and later of the Premier's Office

Peter Epp, on the staff of the Minister of PIR

Virginia West and **Geoff Hare**, deputy ministers of MOE and PIR respectively

Glen Shortliffe, former Clerk of the Privy Council

James W. Merritt, former assistant deputy minister of MOE, and now chair of the Advisory Council on Drinking Water Standards

ANNEX D. Economies of scale and scope in water systems

In most industrial processes, the cost of producing an additional unit of output tends to start out high, when output is low, and then drops quickly. This reflects economies of scale. As output grows beyond a certain limit, costs of an additional unit often rise again, providing a diseconomy of scale. Discussions of scale take into account both the capacity of the physical plant and equipment used in production, and how operating costs change as output rises. Unit costs usually start off high because a minimum investment in fixed assets is needed to produce even a small number of outputs.

The economic literature on economies of scale in the water sector is limited, in part because prices do not reflect costs very well.[58] Another complicating factor is the uniqueness of each system: even when (as is rarely the case), the same plant design is selected, such intervening variables as customer density, soils, climate, topography, and source water quality all have an impact on costs.

The Panel therefore asked the advice of one of the country's leading engineering firms, designers of many of the water and wastewater systems in Ontario and an active participant in the current marketplace. The firm shared confidential data on costs for hundreds of plants, both in Ontario and all over North America.

The firm's data and a review of the available literature suggested that where similar technologies are used, there are strong economies of scale in the capital costs of both water treatment and sewage treatment plants as one moves from plants serving hundreds or a few thousands of customers up to 100,000 or more. After that, scale economies were more modest. The economies of scale in plant construction costs are somewhat offset, however, by increasing diseconomies of scale as distribution and collection networks grow. As well, for sewage treatment, further diseconomies of scale appear owing to the costs of solids disposal, which rise from 10 to 20 per cent of total costs in mid-sized plants to 50 per cent or more in the largest.

These conclusions relate largely to the costs of building systems. Distribution (in a drinking water system) tends to account for about 75 per cent of the initial capital costs of a system, while the treatment plant itself accounts for the remaining 25 per cent. This suggests that wherever possible, water treatment plants should be built to serve the largest group of customers possible before the savings are offset by higher costs of distribution. With wastewater plants, both solids disposal and the costs of the collection network put an upper limit on the optimal size of the customer base.

Looking at operating costs alone, the scale economies are not as pronounced. This is important for the Ontario situation, where geography often limits the ability to connect systems physically. One of the Walkerton papers summarized the U.S. evidence on economies of scale: large for capital costs, modest for operations.[59] One of the best U.S. papers, concentrating on smaller, partly rural systems in New York state serving between 2,100 and 57,000 people, focused directly on the joint minimization of treatment and distribution costs. The authors concluded that "only in the most densely populated areas would any remaining economies of size in treatment outweigh the diseconomies in transmission and distribution."[60]

[58] An exception is S. Renzetti, "Municipal Water Supply and Sewage Treatment: Costs, Prices and Distortions," *Canadian Journal of Economics* 32, vol. 2 (1999): 688-704. Renzetti showed that there were scale economies at the mean of the data set but did not test if these diminish with size of the utility.

[59] Strategic Alternatives et al., *Financing Water Infrastructure*, 50.

[60] R. Boisvert and T. Schmit, "Tradeoff Between Economies of Size in Treatment and Diseconomies of Distribution for Rural Water Systems," *Agricultural and Resource Economics Review* 27, no. 2 (1997), 237-247.

Another U.S. paper carries out a detailed analysis of the relative efficiency of water systems by size in that country, using data from more than 500 plants.[61] The study concludes that there are significant economies of scale as plant size increases, with the greatest increases in efficiency occurring as the customer base passes 10,000. The greatest economies of scale were found in capital, outside, materials and "other" costs, while labour and energy exhibited the fewest economies of scale.

Summarizing studies from different parts of the world, the World Bank found that there were economies of scale for "smaller" utilities, which they define as having fewer than 125,000 connections (in other words, all but a dozen or so of Ontario utilities). For these "small" systems, doubling the amount of water produced was associated with cost increase ranging from 63 per cent in Africa to 86 percent in the U.S.; doubling the number of connections or customers increased costs by 50 per cent (Indonesia) to 105 per cent (Peru). In the U.S. case, doubling the number of customers raised costs by 98 per cent.[62]

Studies in Korea[63] and France[64] make the same point about plant scale economies, and begin to engage the spatial diseconomies of distribution systems. A classic earlier paper makes the same point, noting that the U.S. data for drinking water production closely fit a negative exponential function, and that the cost of delivery was a U-shaped function with a minimum of about 10 km.[65]

A caution in assessing all studies that attempt to link system size and system costs is that they generally ignore the impact of other factors – population density, water source, terrain and climate, for example – on costs. This is a significant problem, because in Ontario these factors may well affect small places disproportionately. It is not hard to imagine that larger communities grew to be that way because they are located where there is mild climate, access to a good water source, and deep soil, all of which lower water costs. Recent work by researchers at Brock University[66] has attempted to correct for major factors that are out of operators' control. The preliminary conclusion is that technical efficiency does not vary much with scale, though costs may.

Studies of regionalization and consolidation are scarce, in part because they tend to be done as commissioned pieces for particular utilities and hence do not find their way into the broadly published literature. One published study for a small town/rural county in South Carolina projected a 44 per cent reduction in capital costs as a result of consolidation at the county level.[67] Studies of consolidation in metropolitan areas[68] as well as growing but less heavily urbanized areas[69] contain useful lessons about how to manage the process and the local politics on the way to substantial overall savings.

[61] J. Shih, et al., "Economies of Scale and Technical Efficiency in Community Water Systems," *Discussion Paper 04-15* (Resources for the Future: Washington, D.C., 2004).

[62] World Bank, "Optimal Size for Utilities' Returns to Scale in Water: Evidence from Benchmarking," *Public Policy for the Private Sector* no. 283 (2005).

[63] E. Kim and H. Lee, "Spatial Integration of Water Services and Economies of Scale," *Review of Urban and Regional Development Studies* 10, no. 3 (1998): 3-18.

[64] S. Garcia and A. Thomas, "The Structure of Municipal Water Supply Costs: Application to a Panel of French Local Communities," *Journal of Productivity Analysis* 16, no. 3 (2001): 5-29.

[65] R. M. Clark, "Applying Economic Principles to Small Water Systems," *Journal, American Water Work Association* 79, no. 5 (1987): 57-61.

[66] Renzetti, S. and Dupont, D., "Measuring the Relative Efficiency of Municipal Water Suppliers: the Role of Environmental Factors" (in press).

[67] J. C. Hite and J. B. Khatri-Chhetri, "A Prototype Water Supply Plan for a Rural Area," paper presented at "Conserv 90," The National Conference and Exposition Offering Water Supply Solutions for the 1990s, Phoenix, August 1990.

[68] J. R. Laird, "Metropolitan Water Market Development: Seattle, Washington," *Journal of Water Resources Planning and Management* 114, no. 2 (1988): 223-238.

[69] D. Moss and T. Murray, "The Public Utility as Consolidator: Experiences with the Negotiated Acquisition of Municipal and Private Utilities," paper presented at the AWWA/WEF Joint Management Conference, Dallas, 2003.

A drawback of the economic literature on water systems is that it tends to focus on water supply, not sewage collection and treatment. In particular, the questions of whether there are economies of scope – lower cost by operating water and sewer services in the same organization – or whether cost reductions can be achieved by stretching one management organization over several physically separated systems, are hard to answer from the research literature, little of which appears to have been done with Canadian data. This gap should be remedied by studies commissioned by public authorities at both provincial and federal levels.

Some international studies have found economies of scope, even where "the economies of scale achieved in water treatment are mostly lost in the distribution of water."[70] In this U.S. case, scope was restricted to production and distribution of residential and non-residential water supply. In Britain, one econometric study rejected the possibility of economies of scope where that was taken to be water supply and sewage treatment, but the huge scale of the ten water companies in that country and their private ownership do not make for easy translation to the Ontario context.[71]

In Ontario, several leading utilities have opted to manage water and wastewater in a single organization, reflecting the pragmatic judgment that cross-training staff, simplifying procurement, and saving on administrative overheads, including billing and collection, can produce real savings.

[70] H. Youn Kim and R. M. Clark, "Economies of Scale and Scope in Water Supply," *Regional Science and Urban Economics* 18 (1988): 479-502.

[71] D. Saal and D. Parker, "The Impact of Privatization and Regulation on the Water and Sewerage Industry in England and Wales: A Translog Cost Function Model," *Managerial and Decision Economics* 21 (2000): 253-268.

ANNEX E. Possible northern clusters

Lead Municipality = City of North Bay

Town of Mattawa
Municipality of Callander
Municipality of Powassan
Municipality of West Nipissing
Town of Parry Sound
The Village of South River
The Village of Sundridge
The Village of Burk's Falls
The Municipality of McDougall
The Township of Carling
The Local Services Board of Thorne

Lead Municipality = City of Greater Sudbury

The Municipality of Markstay-Warren
The Town of Espanola
The Municipality of French River
The Municipality of St. Charles
The Township of Nairn and Hyman
The Township of Sables-Spanish Rivers
The Town of Northeastern Manitoulin and The Islands
The Township of Tehkummah
The Township of Central Manitoulin
The Township of Assiginack
The Township of Billings
The Township of Gordon
The Town of Gore Bay
The Municipality of Killarney
The Local Services Board of Willisville

Lead Municipality = City of Sault Ste. Marie

The Township of Macdonald, Meredith and Aberdeen Additional
The Village of Hilton Beach
The Township of St. Joseph
The Township of Johnson
The Town of Bruce Mines
The Township of Plummer Additional
The Town of Thessalon
The Municipality of Huron Shores
The City of Elliot Lake
The Town of Blind River
The Township of Shedden
The Township of The North Shore
The Township of Michipicoten
The Township of Dubreuilville
The Township of Chapleau

Lead Municipality =
The City of Temiskaming Shores

The Township of Matachewan
The Township of Evanturel
The Town of Englehart
The Township of Armstrong
The Township of Casey
The Township of James
The Municipality of Charlton and Dack
The Township of Coleman
The Town of Cobalt
The Town of Latchford
The Municipality of Temagami
The Village of Thornloe
The Local Services Board of Gogama

Lead Municipality = The City of Timmins

The Township of Black River-Matheson
The Town of Iroquois Falls
The Town of Kirkland Lake
The Township of Larder Lake
The Township of McGarry
The Local Services Board of Foleyet

Lead Municipality = The Town of Kapuskasing

The Town of Hearst
The Township of Mattice-Val Côté
The Township of Opasatika
The Township of Val Rita-Harty
The Township of Moonbeam
The Town of Cochrane
The Township of Fauquier-Strickland
The Town of Smooth Rock Falls
The Local Services Board of Jogues
The Local Services Board of Hallebourg

The Town of Moosonee

Lead Municipality = The Town of Marathon

The Township of Manitouwadge
The Township of Terrace Bay
The Township of Schreiber
The Township of White River
The Township of Hornepayne
The Municipality of Greenstone
The Township of Red Rock
The Township of Nipigon
The Local Services Board of Rossport
The Local Services Board of Armstrong

Lead Municipality = The City of Thunder Bay

The Municipality of Oliver Paipoonge

Lead Municipality = Town of Fort Frances

The Township of Atikokan
The Township of Emo
The Township of Chapple
The Town of Rainy River

Lead Municipality = The City of Dryden

The Township of Machin
The Municipality of Sioux Lookout
The Township of Pickle Lake
The Township of Ignace

Lead Municipality = The City of Kenora

The Municipality of Red Lake
The Township of Ear Falls

Recommendation 4.1
The Province should require, under sections 3, 4, 9, 10 and, if necessary, 11 of SWSSA, the creation of business plans for submission to the Ontario Water Board. These plans should be produced by single-tier municipalities not located within the boundaries of a county; by regional municipalities; and by counties, working in cooperation with the lower-tier municipalities and separated single-tier municipalities within their boundaries.

Recommendation 4.2
The geographical basis of a business plan may, if agreed with the relevant jurisdiction(s), extend beyond the boundaries of the county, single-tier municipality or regional municipality, and should contain wherever possible a minimum of 10,000 customers.

Recommendation 4.3
The business plan should be consistent with all requirements of SWSSA and SDWA, with provincial growth management policy, and with municipal official plans; should include a governance, financial and accountability model and a proposed rate structure; and should take into account:

- efficiencies available through technological choice and innovation as well as economies of scale and scope;
- efficient provision of service, including existing or revised contracting possibilities;
- natural economic communities, such as centres which draw commuters from the surrounding area;
- management of septage on a county or multi-county basis; and
- the governance principles in Recommendations 5.1 through 5.5.

Recommendation 4.4
The business plan should be approved by county or regional municipal council and by the council of any included separated city and submitted to the Ontario Water Board by June 30, 2007.

Recommendation 4.5
The Water Board may require deficiencies in a business plan or group of business plans to be made good, without relaxing the time line, before it accepts the business plan(s) and begins detailed analysis.

Recommendation 4.6
The Water Board should no later than June 30, 2008 render a decision on the business plan. Where, despite requests for the repair of deficiencies, an adequate plan has not been submitted, or the Board does not approve the plan that was submitted, the Board may exercise the powers under section 12 of SWSSA.

Recommendation 4.7
Section 54 of the OWRA should be repealed.

Recommendation 4.8
The principal municipality in each cluster in the North should take the lead in developing the business plan, following the process and time frame set out in Recommendations 4.1 through 4.6 and involving municipalities and local services boards, and First Nations communities in the cluster as appropriate.

Recommendation 4.9
The *Municipal Act* should be amended to give all Regional Municipalities exclusive jurisdiction over all elements of the water and wastewater sector.

Recommendation 4.10
The provincial government should provide one-time financial assistance consisting of a uniform per-customer grant for the total customer base covered by each business plan, to be paid when the Water Board accepts the plan.

Recommendation 5.1
The Province should amend O. Reg. 168/03, under the *Municipal Act*, to allow municipalities to form corporations to deliver water and wastewater services and to own or lease the relevant assets, or to deliver a range of municipal services including water and wastewater, and to make it possible for more than one municipality to share in the ownership of such corporations.

Recommendation 5.2
At least two-thirds of the directors of the board of a water service should be drawn from private life, with any remainder consisting of appointments from municipal council.

Recommendation 5.3
A shareholder's declaration between the municipal owner and a corporation delivering water services should set out, at a minimum:

- The powers, selection, and terms of board members;
- Reporting and accountability requirements;
- Standard of care and diligence (and indemnification when acting in good faith);
- The requirement for an annual business plan, annual and quarterly public reporting, and a public annual general meeting;
- Actions requiring shareholder ratification, such as the annual business plan, rates, or a dividend policy;
- The shareholder's residual power of direction; and
- Any other basic matters of operations and policy in which the shareholder is concerned.

Recommendation 5.4
Water services should have responsibility for metering, billing and collecting arrangements, and should maintain separate accounts from those of their municipality; water provided to the municipality should be priced at the same rate that other customers pay; and all other transactions between the parties, such as overhead, should be priced at market value.

Recommendation 5.5
All financial flows between water services and municipalities should be reported publicly.

Recommendation 5.6
The Province should commission and publish basic contract templates for water and wastewater operations ranging from short-term operating contracts to long-term lease and concession arrangements.

Recommendation 6.1
The Province should create a new regulatory body called the Ontario Water Board, reporting to the Legislature through the Minister of the Environment, and grant the powers of the Minister under SWSSA to the Board. The Board should analyze and rule on water service business plans and compliance with quality management certification, and may hold hearings, receive submissions and make decisions regarding, among other things, business plans, issues of service quality, abuse of dominant position, and franchise areas.

Recommendation 6.2
The Ontario Water Board should require water services to provide information annually about their compliance with its regulatory regime and their financial and service performance, and should ensure that this information is made available to the public in a way that allows meaningful comparisons with the goals set by each water service and the performance of a peer group.

Recommendation 6.3
The Water Board should normally require an update of business plans only every five years, on a staggered basis; any proposed material change to the plan before the end of the five-year period should be submitted to the Board for approval.

Recommendation 6.4
The Province should amend the *Safe Drinking Water Act* to include a certification and licensing procedure for wastewater operations on the model of the Drinking Water Quality Management Standard.

Recommendation 6.5
Once a water or wastewater system operator is licensed under SDWA, and operating under a business plan approved by the Water Board, it should no longer be required to obtain a Certificate of Approval for any system addition or change approved by a professional engineer. Section 43 of SDWA and other references to a certificate of compliance for municipal water and wastewater systems should be repealed.

Recommendation 6.6
The Ministry of the Environment should, in consultation with municipalities and water services, create a registry of all non-municipal systems serving between six and 100 users; should identify those that pose the most urgent risks to public health and, working with municipalities and water services, act as quickly as possible to mitigate those risks in the most cost-effective way possible; and should develop a long-term plan to minimize the risks and costs associated with the remaining systems.

Recommendation 7.1
In addition to ordinary commercial borrowing, corporatized water services should have the power to issue revenue bonds.

Recommendation 7.2
After exhausting all other normal means of collection, water services should be able to transfer arrears to the municipality, which would then place the arrears on the property tax roll as a lien on the associated real property that is collectible as taxes. The amount of the lien should include all outstanding bills, accrued interest, and related legal and collection costs.

Recommendation 7.3
Water service business plans should be based on a transition to full-cost recovery of not more than five years from initial submission of the business case to the Water Board.

Recommendation 7.4
The Ontario Water Board should provide guidance to the water sector to ensure consistent application of full-cost recovery regulations and appropriate accounting standards.

Recommendation 7.5
COMRIF and any future grant programs for water or wastewater projects in a sustainable system should be phased out by the start of the 2012 municipal fiscal year. In the meantime, grants should be conditional on the project being in compliance with all relevant legislation and the recommendations of this report, including the recommendations on business planning.

Recommendation 7.6
The focus of any water component of provincial and federal infrastructure programs should be unsustainable systems only; funds should not be limited to capital purposes, and should be routinely available once eligibility criteria are met.

Recommendation 7.7
OSIFA should focus its efforts on infrastructure needs other than water and wastewater infrastructure.

Recommendation 7.8
Where average water and wastewater unit costs in a water service will be more than 2.5 times the provincial average unit cost of production under full-cost recovery, after all possible cost savings, cross-subsidizations and consolidations have been considered, and on the petition of the water service owner, the Water Board should have the power to declare the water service unsustainable and place the relevant assets and liabilities under provincial trusteeship.

Recommendation 7.9
The Province should operate and maintain, under contract, unsustainable water services, absorbing all costs above the 2.5 times average threshold, until it has found a way of reducing costs below that threshold; whereupon it may petition the Ontario Water Board for an unwinding of the trusteeship.

Recommendation 8.1
Metering should be mandatory in all sustainable water systems.

Recommendation 8.2
The water rate may include a constant portion, representing the fixed costs of providing the service, and must include a non-decreasing volumetric charge.

Recommendation 8.3
Volumetric water rates should not discriminate among industrial, commercial, institutional, residential, recreational or municipal classes of customer of a water system.

Recommendation 8.4
Water service business plans should include an assessment of the costs and benefits of using seasonally varying prices to flatten demand.

Recommendation 8.5
A development charge should be used to pay for any increase in capacity that benefits a specific consumer or new group of consumers; where development charges are not available to the water service, business plans must show how expansion will be paid for without burdening existing customers.

Recommendation 8.6
In the case of a major industrial development with benefits to the provincial economy as a whole, the Province may elect to pay some or all of the incremental water and wastewater capital costs.

Recommendation 8.7
Where the cost of a subsidy from the general customer base to an existing group of residential consumers would be less than the social costs of not providing the subsidy, and as long as the subsidy will not make rates unaffordable to general customers, the general customer base may be used to subsidize service to that group.

Recommendation 8.8
Wastewater facilities should be able to charge for septage handling and treatment, with charges set out in the rate structure developed through the business planning process.

Recommendation 9.1
MOE should devote additional resources on a continuing basis to assisting in the timely adaptation of innovative technologies and techniques for use in Ontario's water and wastewater sector.

Recommendation 9.2
The Ministry of the Environment should ensure that training is more readily available in remote locations, through distance learning, "circuit rider" trainers, accreditation of more qualified institutions or organizations, and recognition of accreditation from other provinces having certification standards similar to those of Ontario.

Recommendation 9.3
MOE should work with the Ontario Municipal Water Association (OMWA) and the Ontario Water Works Association (OWWA) to assess the need to increase the number of people available to undertake professional and directorial roles in the Ontario water industry, and to offer training and skills upgrading as necessary.

Recommendation 10.1
The Province should amend the *Capital Investment Plan Act* to delete reference to OCWA; OCWA should be incorporated under the *Ontario Business Corporations Act* and have all the ordinary powers, responsibilities and liabilities of a normal OBCA corporation, with the Province as its sole shareholder; OCWA should cease to be an agent of Ontario, and its employees should cease to be members of the Ontario Public Service.

Recommendation 10.2
The Province should draft a new Shareholder Declaration setting out the activities, goals and governance of the corporation, which should include the freedom to enter into joint ventures and other arrangements with other sector participants, whether in the public or private sector.

Recommendation 10.3
The Province should name a board composed of experienced and competent people from the private sector who have full authority to appoint the chief executive and senior officers of OCWA.

Recommendation 10.4
The new board should draw up a strategic plan aimed at achieving OCWA's full potential in its revitalized form in the context of Ontario's reformed water sector and, if it wishes, in other markets as well.

Recommendation 10.5
On the basis of its acceptance of the strategic plan, the Province should ensure that OCWA's capital structure is appropriate to the activities it will carry out.

Recommendation 10.6
The Province should no longer guarantee the obligations of OCWA nor indemnify its actions; OCWA should pay all normal taxes and be able to make independent banking arrangements.

Recommendation 10.7
Before May 2006, unless a suitable new revenue source for the pipeline appears, the Province should arrange for the wind-up of the New Tecumseth Improvement Society and provincial assumption of its assets and such of its debt as cannot be serviced from reasonable user charges.

Recommendation 10.8
If the Province assumes the pipeline and its debt, it should then arrange for OCWA or another certified operator to operate the pipeline under a long-term lease or concession arrangement, with the contractor having the power to maximize the revenues of the pipeline so long as the effect is not to increase the price of water to Honda beyond what it would otherwise have been, nor to make water rates for other customers unacceptably high, in the view of the Water Board.

Recommendation 10.9
Emergency plans required under SDWA should include arrangements with nearby water services for mutual assistance in emergencies.

NOTES

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Le document « *À TOUTE ÉPREUVE : l'importance d'améliorer le secteur ontarien de l'eau* » est disponible en français.